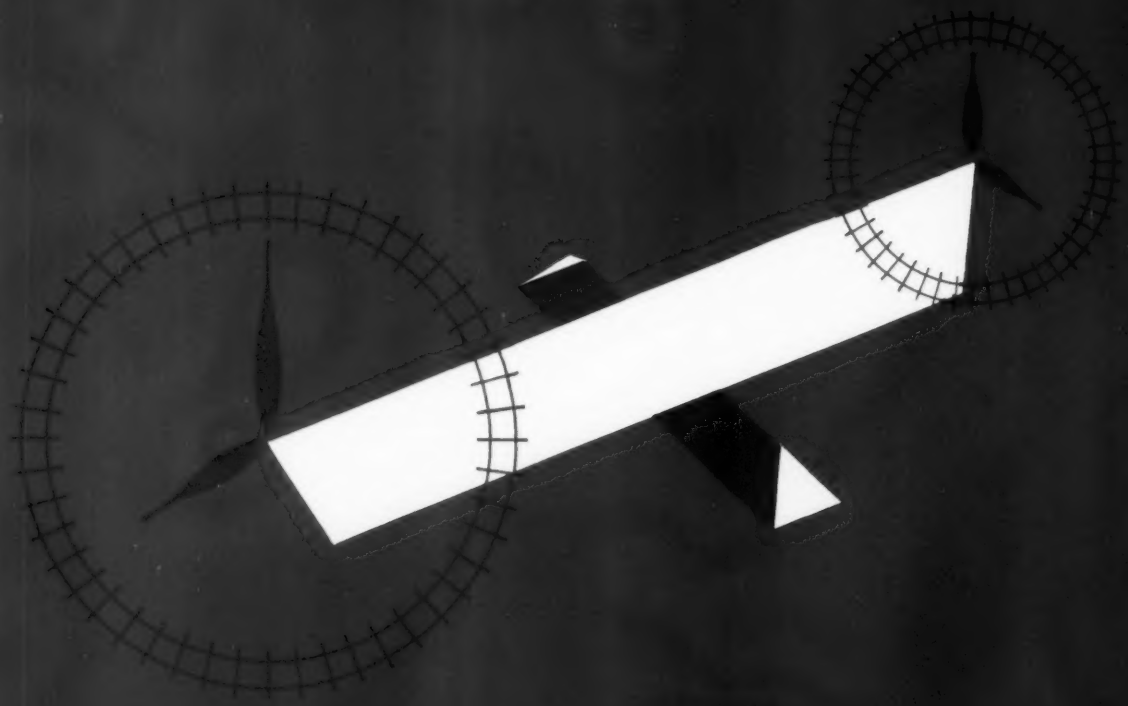
The Best
IN RAIL JOINTS...
Less MAINTENANCE
Longer RAIL LIFE
On the Jersey Central Lines
THE RAIL JOINT COMPANY, Inc.
50 Church Street
New York 7, N. Y.

Let Reliance HY-CROME Spring Washers help you



increase time between Track Joint Maintenance Periods

Lengthening the time between periodic tightening of rail joint bolts reduces the cost of maintaining track.

Reliance Hy-Crome Spring Washers are a product of the combined engineering experience of Eaton-Reliance fastening engineers, railroad track engineers and modern manufacturing methods.

To keep track joints tighter longer, a spring washer with adequate non-fatiguing reactive pressures had to be developed. Reliance Xtra-hy Hy-Crome Spring Washers were specifically developed to meet and exceed the 1948 A. R. E. A. Specifications.

Manufactured from special alloy spring steel of correctly engineered section sizes, their inherent reactive pressure over a wide reactive range is able to automatically compensate for developed looseness in the rail joint assembly and to keep it **tighter longer.**

A trial will convince you. Write now for Reliance Hy-Crome Spring Washer Folder R53.

"Edgemark of Quality"

RELIANCE DIVISION EATON MANUFACTURING COMPANY

OFFICE and PLANTS: 601 Charles Ave., SE, MASSILLON, OHIO

Special Steels Spring Lock Washers Hoz-Fos-Ners

SALES OFFICES: New York • Cleveland • Detroit • Chicago • St. Louis • San Francisco • Montreal

Takes the fight out of Heavy Switches

This is a switch stand with plenty of power—the type of power needed with heavy rail. It's Bethlehem's Model 53, one of the simplest, most "muscular" stands ever put on the market. Yet, in spite of the great leverage it develops, it's easy to throw.

The heart of the stand is Bethlehem's well-known sliding-block-and-crank device, which is pictured here. Study the photograph. Visualize yourself lifting the lever. During the course of the throw, the machined steel block slides upward, then downward, describing an arc as it travels. The force of its movement is passed to the spindle, which rotates smoothly and thereby changes the position of the crank.

Only three moving parts. Nothing that can lead to complications. Nothing that ever demands laborious, costly maintenance. Simple, effective, and always powerful . . . that's the 53!

We can highly recommend this husky, durable stand for both main-line and heavy yard duty. For more details, talk with a Bethlehem representative; he will be glad to supply full information.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

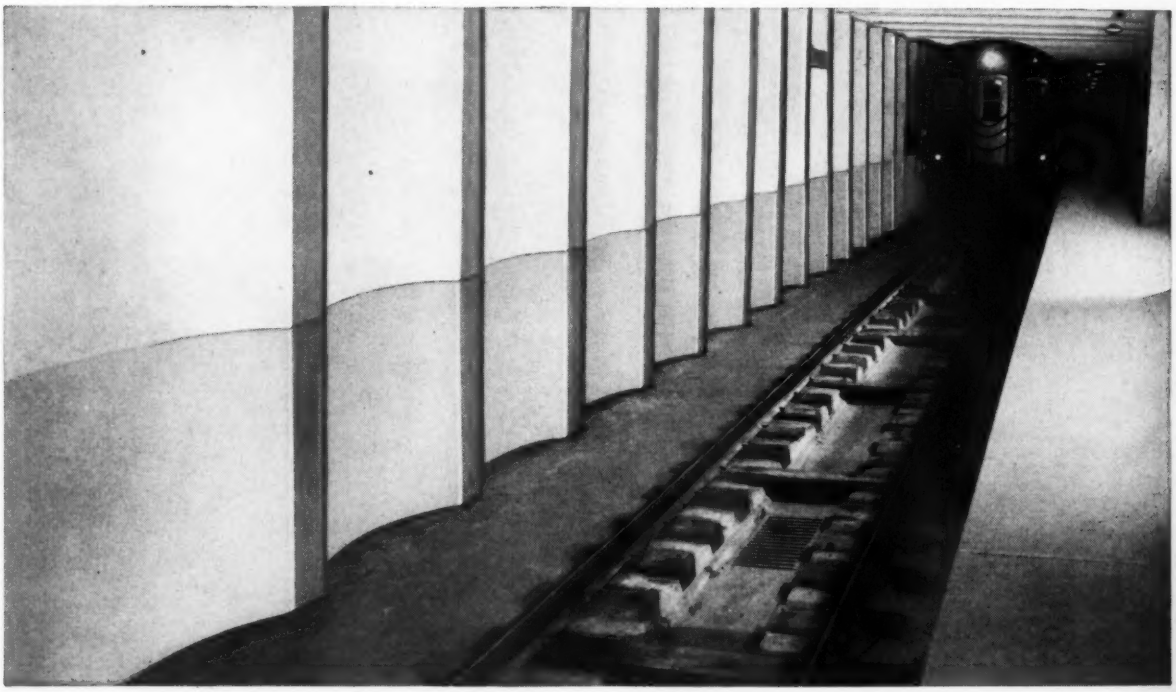
BETHLEHEM STEEL

Published monthly by Simmons-Boardman Publishing Corporation, 79 W. Monroe St., Chicago 3, Ill. Subscription price: United States and Possessions, and Canada, one year $2.00 (special rate to railroad employees only, one year $1.00). Single copies 50 cents. Entered as second-class matter January 20, 1933, at the post office at Chicago, Ill., under the act of March 3, 1879, with additional entry at Bristol, Conn. Volume 49, No. 5.

DOW

WOOD TIES IN NEW SUBWAY ARE PENTA TREATED FOR LONG LIFE

Railway lumber gives long trouble-free service when treated with PENTA, the clean, modern wood preservative



The Dow Chemical Company
Dept. PE 3-383, Midland, Michigan

Please send me:

- ☐ Wood treating specifications.
- ☐ Valuable booklet "Pointers on Penta."
- ☐ Sources for treated wood.

Name_____

Title_____

Company_____

Address_____

City_____ State_____

Wood ties in Philadelphia's new Locust Street Subway are pressure treated with clean PENTA*. The specifying engineers on this big subway project selected PENTA because experience and records prove that it gives top results under tough conditions.

PENTA will keep these subway ties strong and serviceable year after year by positively controlling decay-causing bacteria and fungi.

You can also rely on PENTA to prevent damage caused by termites. Besides controlling decay and termites, PENTA builds good customer relations because it is *clean*. Platforms and loading docks built with PENTA-treated lumber are pleasing to the eye and easy to walk on. Workmen like PENTA-treated wood, too, because it is easy to handle.

Send today for more information about *PENTAchlorophenol, the clean, modern wood preservative. THE DOW CHEMICAL COMPANY, Midland, Michigan.

you can depend on DOW CHEMICALS

DOW

AVOID the little losses that can delay you...

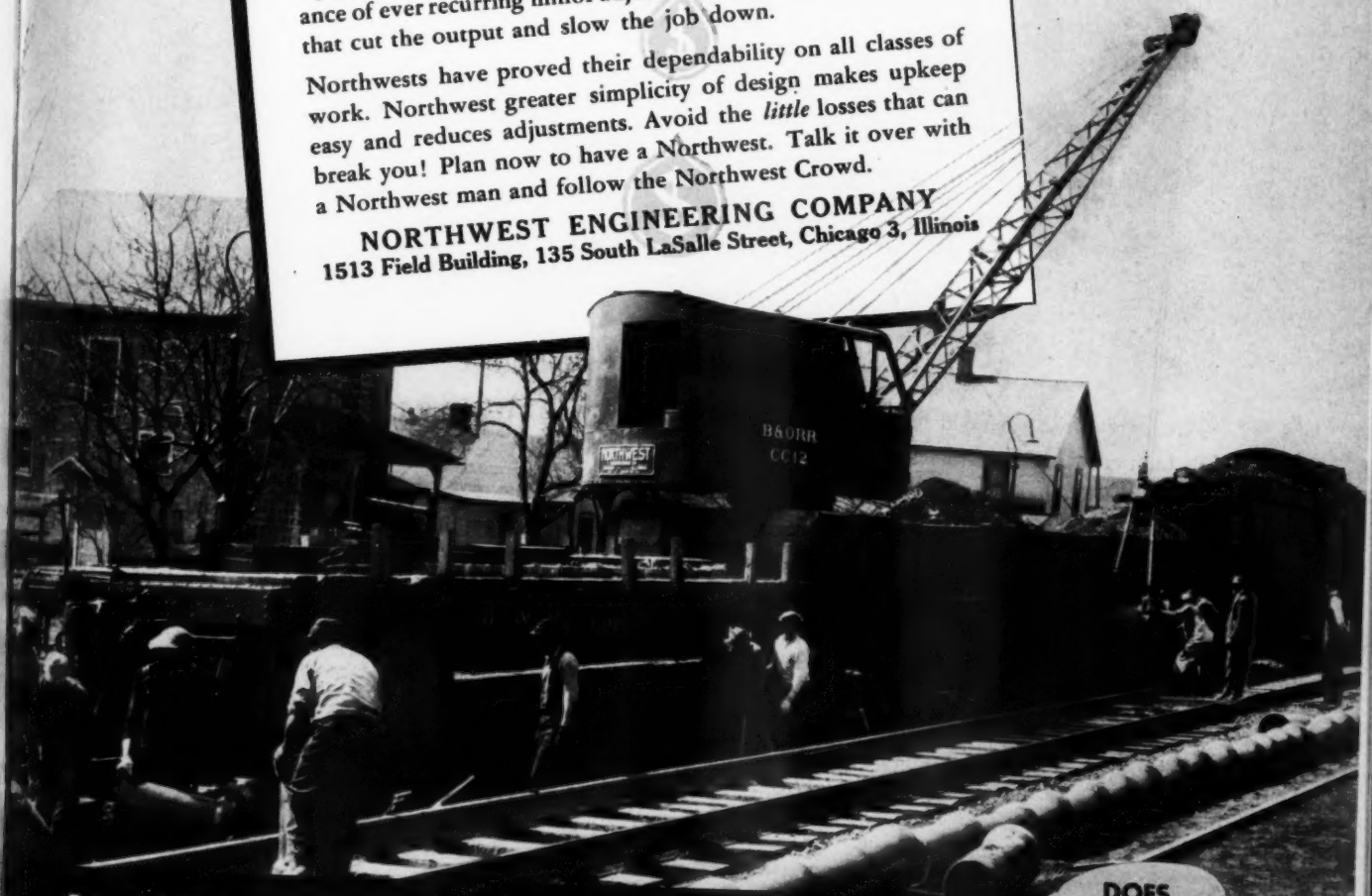
BUY A NORTHWEST

SMALL breakdowns and adjustments mean small losses but small losses total into large losses and nick real holes in the cost of the job.

That's just another of the many differences between Northwest equipment and others — you are free from the constant annoyance of ever recurring minor adjustments and small breakdowns that cut the output and slow the job down.

Northwests have proved their dependability on all classes of work. Northwest greater simplicity of design makes upkeep easy and reduces adjustments. Avoid the *little* losses that can break you! Plan now to have a Northwest. Talk it over with a Northwest man and follow the Northwest Crowd.

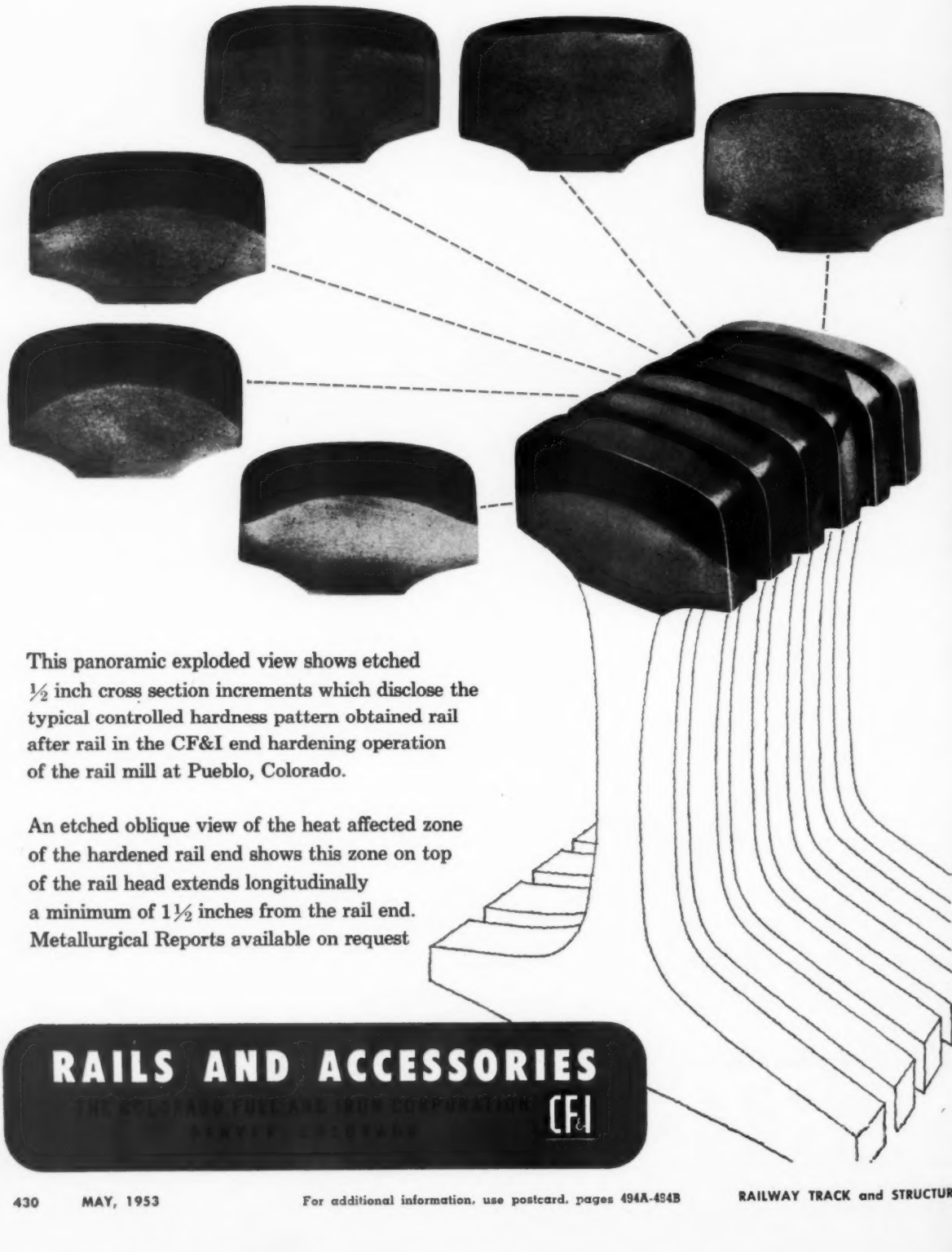
NORTHWEST ENGINEERING COMPANY
1513 Field Building, 135 South LaSalle Street, Chicago 3, Illinois



NORTHWEST

THE ALL PURPOSE RAILROAD MACHINE
SHOVEL • CRANE • DRAGLINE • PULLSHOVEL

CF&I MILL END-HARDENED RAILS



This panoramic exploded view shows etched ½ inch cross section increments which disclose the typical controlled hardness pattern obtained rail after rail in the CF&I end hardening operation of the rail mill at Pueblo, Colorado.

An etched oblique view of the heat affected zone of the hardened rail end shows this zone on top of the rail head extends longitudinally a minimum of 1½ inches from the rail end. Metallurgical Reports available on request

RAILS AND ACCESSORIES

THE COLORADO FUEL AND IRON CORPORATION
DENVER, COLORADO

CF&I

Cutting Sherman Hill down to size

Nature didn't always fashion hills for modern railroading. But with Caterpillar DW20 wheeled Tractors on your team, you can rearrange the earth to your convenience.

Outside Cheyenne, Wyo., the Union Pacific is doing just that on famous Sherman Hill. When the barrel-chested Cat* Diesel Tractors with their matching No. 20 Scrapers are done, 3,000,000 yards of rock and 4,000,000 yards of dirt will have been moved. Grades and curves will have been eliminated. So will the necessity for using steam locomotives and helpers. Sherman Hill will be tailored for Diesel travel.

The big yellow work horses on Sherman Hill are barreling through 8 trips an hour on a one-mile haul, carrying a capacity load. Capacity for the rough-and-ready units is 20 cubic yards heaped, 15 yards struck.

You expect this performance of Caterpillar DW20s. The burly tractor doesn't die with heavy loads or in loose soil because of the tenacious lugging characteristics built into it. The earth-eating scraper loads and spreads quickly. Its high apron lift and positive ejection get rid of heaping, sticky materials in a hurry. It is cable-operated for fast, sure action.

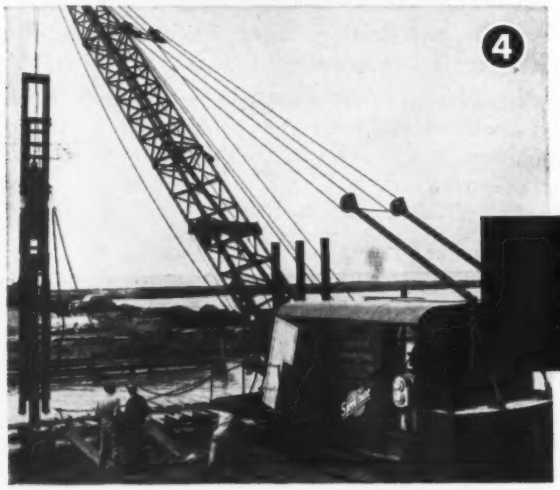
You'll like these Cat units and so will your operators. Their easy maneuverability and safety make them operators' favorite equipment. Ask your dealer for a demonstration. It will help you understand why many railroads use Caterpillar equipment for off- and on-track work.

Caterpillar Tractor Co., Peoria, Illinois.

CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks—®

**NAME THE DATE...
YOUR DEALER
WILL DEMONSTRATE**



BIG SAVINGS ...4 WAYS with

MONOTUBE tapered steel piles

THE list of Monotube advantages is long. And you are welcome to *all* the facts . . . anytime. Meanwhile, think of the time and money you can save as a result of . . .

1. FIELD ASSEMBLY. Monotubes can be quickly, easily tailored to required length on the job, minimizing cut-off waste and saving time. Photo shows simplicity of nesting a Monotube extension with a "come-along" and two cable chokers.

2. SIMPLIFIED EXTENDIBILITY. When piles cannot be driven in one piece, Monotubes are readily welded and extended to *any* length as driving progresses. You eliminate complicated welding procedure by using a simple "girt" weld under normal driving conditions.

3. EASY CUT-OFF. With lightweight Monotubes, the cut-off operation is fast and easily accomplished. Careful use of cut-off sections as extensions minimizes waste.

4. DRIVING LONG PILES WITH SHORT LEADS. Because of Monotubes' cold-rolled strength, light weight and simple on-the-job extendibility, you can save the expense of special rigs, long leads or heavy driving equipment on tough jobs. Photo shows standard crane with short lead driving 150-ft. Monotube, in sections, 58 feet from shore.

For complete information, for more evidence that you'll be 'way ahead with Monotube piles, write to The Union Metal Manufacturing Co., Canton 5, Ohio.

UNION METAL

Monotube Foundation Piles

"face" it...with R-Mang!

ARC WELDING with Airco R-MANG electrodes is the modern method for the build-up and repair of battered or broken frogs and crossings . . . in fact, any manganese casting that must withstand repeated impact.

R-MANG electrodes deposit a layer of strong, highly ductile manganese steel. In service, the built-up area rapidly hardens to over 450 Brinell, thereby producing maximum resistance to abrasion and impact. You can economically repair frogs and crossings — *with the least possible interruption of train service* — at a fraction of the cost of replacements.

Get in touch with your local Airco office for details.

AIRCO®

OFFICES IN MOST PRINCIPAL CITIES

AIR REDUCTION

60 East 42nd Street • New York 17, N. Y.

Air Reduction Sales Co. • Air Reduction Magnolia Co. • Air Reduction Pacific Co.
Represented Internationally by Airco Company International
Divisions of Air Reduction Company, Incorporated

at the frontiers of progress you'll find

AN AIR REDUCTION PRODUCT

All along the line

Transite

is the answer to your pipe problems

Transite
reduces installation costs

Because it is light in weight and easy to handle, your water line goes in fast when you use Transite* Pressure Pipe. Crews can lay more pipe per day thanks to Transite's "*packaged*" *joints that are* speedily assembled on the job. Time and *labor* are saved, haulage and installation costs are reduced.

Transite
saves pumping costs

Transite Pipe has a smooth interior that insures maximum flow of water. Reduction in carrying capacity due to tuberculation is never a problem. Made of asbestos and cement, Transite Pipe can't rot or corrode —this exceptional resistance to corrosion enables it to stand up in acid soil conditions and cinder fills where other pipe materials fail.

Transite joints stay tight

The specially designed Simplex Couplings used with J-M Transite Pipe are easy to install and they *stay tight!* These flexible joints effectively absorb vibration, help compensate for soil movements and keep line maintenance costs to a minimum. For further information write Johns-Manville, Box 60, New York 16, N. Y. In Canada, 199 Bay St., Toronto 1, Ontario.

JOHNS-MANVILLE JM PRODUCTS

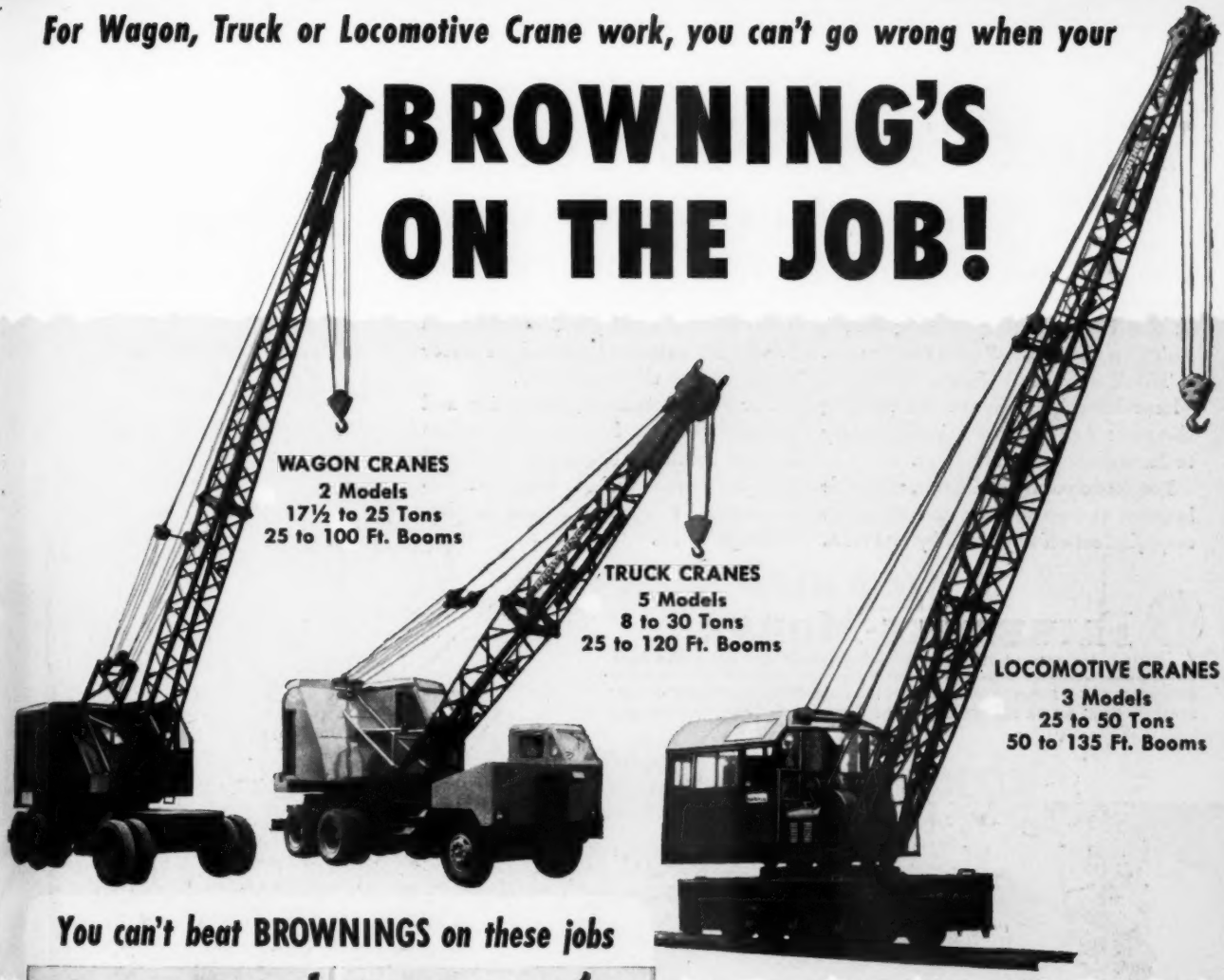
I-626

*Transite is a registered Johns-Manville trade mark.

Johns-Manville
TRANSITE PRESSURE PIPE

For Wagon, Truck or Locomotive Crane work, you can't go wrong when your

BROWNING'S ON THE JOB!



WAGON CRANES
2 Models
17½ to 25 Tons
25 to 100 Ft. Booms

TRUCK CRANES
5 Models
8 to 30 Tons
25 to 120 Ft. Booms

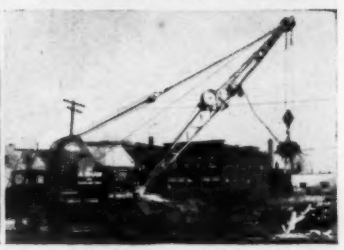
LOCOMOTIVE CRANES
3 Models
25 to 50 Tons
50 to 135 Ft. Booms

You can't beat BROWNINGS *on these jobs*

HEAVY MATERIALS HANDLING

CAR LOADING AND SWITCHING

STEEL ERECTING



SCRAP YARD PICK-UP

RAILROAD MAINTENANCE

SAND AND GRAVEL LOADING

Browning builds the only complete line of cranes for all heavy-materials handling

TRUCK CRANES with independent control of each function *separately* or *simultaneously* on all models. High-speed maneuverability in worst conditions. Short wheelbase for operation in close quarters.

SELF-PROPELLED WAGON CRANES, originated by Browning. Rubber-mounted, one man operation, with the power, smoothness and versatility to operate efficiently and economically on a wide variety of crane work.

DIESEL AND TORQFLO LOCOMOTIVE CRANES with unequaled power for switching. Fast, easy controls for maximum productive operation. Rugged design and construction for year-in, year-out dependability.

BROWNING can recommend, and deliver the *right* crane model for your job. Our fifty-four years' experience as crane specialists is yours for the asking. Write us for complete information.

THE BROWNING CRANE & SHOVEL CO.
Dept. G, 16226 Waterloo Road, Cleveland 10, Ohio

BROWNING
LOCOMOTIVE, WAGON
TRUCK AND CRAWLER *Cranes*

When Time Flies

...on chilled steel wheels!

When trains are constantly speeding towards you from four directions—as at this heavy traffic crossing—there isn't time to "wrestle" with a motor car.

That's why you'll find a Fairbanks-Morse Model 101 motor car working there—and elsewhere—bringing safety to hazardous operating areas.

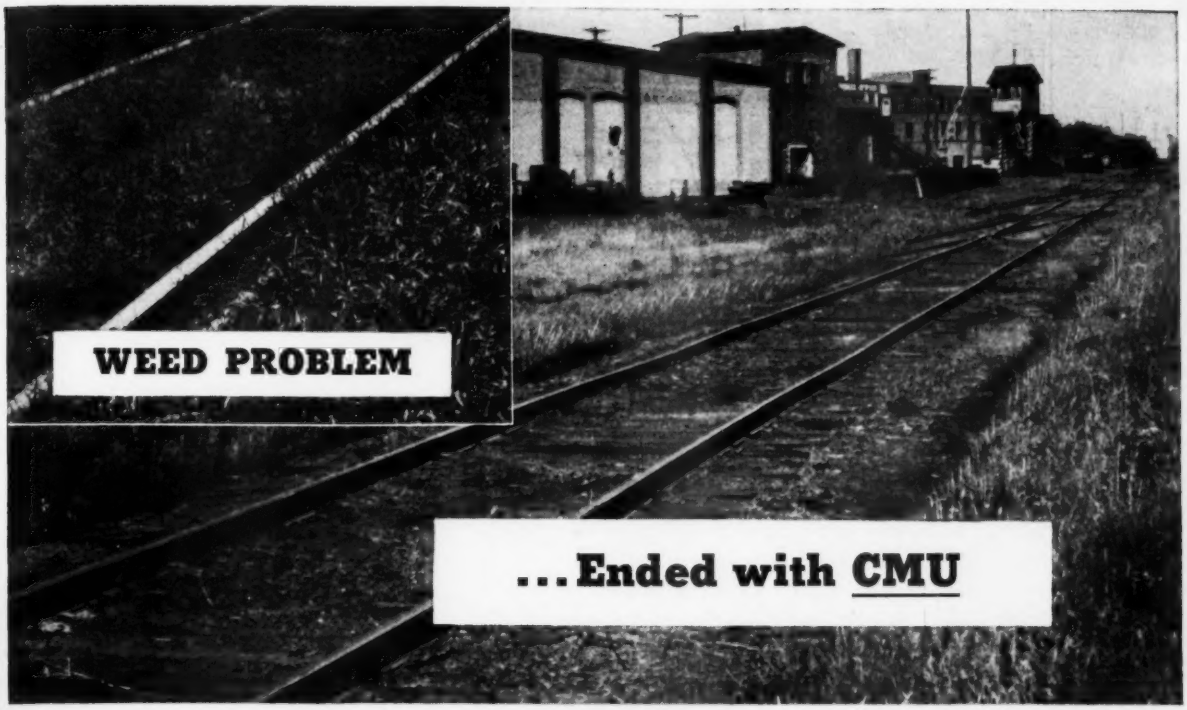
Low lifting-weight, balance, rail skids between the wheels—all contribute to easy, *fast* set-off anywhere by one man. Add features of immediate reverse, four-wheel brakes, grouped controls, full visibility—and you'll see why the Model 101 sets the standard for motor car safety on the rails today.

For all maintenance, inspection and signalling service, look to the complete line of Fairbanks-Morse cars. You'll find the answer to safe, reliable transportation. Fairbanks, Morse & Co., Chicago 5, Ill.

FAIRBANKS-MORSE

a name worth remembering when you want the best

RAIL CARS • DIESEL ENGINES AND LOCOMOTIVES • ELECTRICAL MACHINERY • PUMPS
SCALES • HOME WATER SERVICE EQUIPMENT • FARM MACHINERY • MAGNETOS



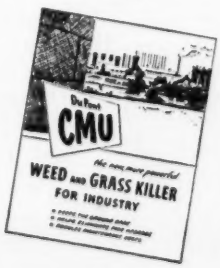
Powerful Du Pont CMU kills weeds and grass and prevents regrowth

Save labor and simplify the job of keeping weeds down . . . with Du Pont CMU. As little as 1 to 1½ pounds per 1000 square feet . . . 40 or 60 pounds per acre . . . can get rid of weeds and grass for an entire growing season or longer. It gives you new long-lasting efficiency in cutting down fire and maintenance problems caused by unwanted vegetation. Use Du Pont CMU around sidings, track, switches, culverts, bridges, fences and railyards.

- Kills most kinds of weeds and grass and prevents regrowth. It works through the roots . . . just spray it on the ground.
- Eliminates fire hazards caused by unwanted vegetation.
- Saves work. One spray with CMU takes the place of repeated hand cutting, mowing, or other less effective means.
- Cuts maintenance. Prevents weeds from fouling up machinery and causing it to rust, keeps the way clear for outdoor work of any kind. Destroys cover for rodents and other vermin.
- Non-flammable, non-volatile, non-corrosive. Comes as a wettable powder to mix with water.

TO GET THIS BOOKLET SHOWING RESULTS WITH CMU, *fill in coupon at right.*

DU PONT
REG. U. S. PAT. OFF.
BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY



E. I. du Pont de Nemours & Co. (Inc.) B-5
Grasselli Chemicals Department
Wilmington, Delaware

Name_____
Firm_____
Street_____
City_____ State_____

Complete BRUSH and WEED KILLING SERVICE

PIONEER in the improved right-of-way brush control

Spraying equipment specifically designed and proven for the purpose

LEADER in effective grass and weed killing control

- TCA
- OILS
- 2, 4-D
- PENTACHLOROPHENOL
- BRUSH KILLERS

For Your Railroad . . .

- PROVEN CHEMICALS
- TRAINED PERSONNEL
- SPECIALIZED EQUIPMENT
- RECOGNIZED EXPERIENCE
- INSURED RESPONSIBILITY

Producing . . .

MAXIMUM VEGETATION CONTROL ECONOMICALLY THROUGH EFFICIENT OPERATION

Spray Services Incorporated

Pioneers in Right-of-Way Spraying

P. O. BOX 5444 HUNTINGTON, W. VA.

MORE THAN 50 AMERICAN RAILWAY SYSTEMS

have chosen

JACKSON MULTIPLES

THE ONLY MACHINE THAT TAMPS *the* VITAL SPOT

THE LOAD BEARING ZONE DIRECTLY BENEATH THE RAIL

as the BEST, MOST ECONOMICAL means of producing the SMOOTHEST, LONGEST-LASTING TRACK it is possible to achieve!

And the fact that a large percentage of these leading railroads have repeated their purchases again and again, with some now operating 10, 12, 16 and as many as 32 JACKSON MULTIPLES each, demonstrates that in actual operation the machine fully confirms the wisdom of such a choice.

We would be happy to have one of our thoroughly experienced track engineers, who knows and understands your problems, discuss with you the ways in which the JACKSON MULTIPLE Tamper can help you achieve finest track and cut maintenance costs to the bone. Write, wire or phone.

MFD. BY JACKSON VIBRATORS INC. LUDINGTON, MICH

SOLD in U. S. A. *by* **ELECTRIC TAMPER & EQUIPMENT CO.**

LUDINGTON, MICHIGAN

Here's one 19,812 feet long...

The Elgin, Joliet and Eastern Railroad's main track includes continuous welded rail sections up to 19,812 feet long. By the end of 1951, additional super length rails will bring the total of continuous track in the System up to 90 miles. Welded joints produced through OXWELD'S RIBBONRAIL service and equipment eliminates the expense encountered in maintaining thousands of standard rail joints. No wonder minor track repairs on the "J" have already been reduced 50 to 75% in continuous rail territories.

Similar track maintenance savings are possible on your railroad. Let us discuss RIBBONRAIL Pressure Welding Service with you. Write today.

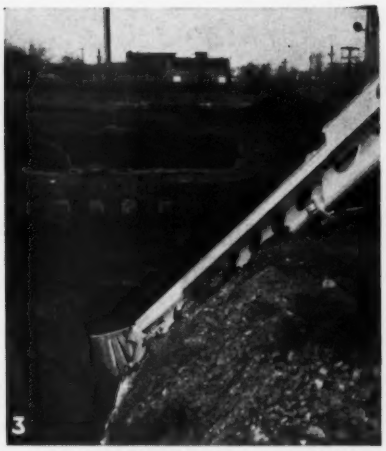
Want full details of the "J's" experience with continuous rail? Write for free booklet F-7772.

OXWELD RAILROAD SERVICE COMPANY
A Division of Union Carbide and Carbon Corporation
UCC
Carbide and Carbon Building Chicago and New York
In Canada:
Canadian Railroad Service Company, Limited, Toronto

"Oxweld" is a trade-mark and "Ribbonrail" is a service mark of Union Carbide and Carbon Corporation.

Gradall trenches up to railroad siding on both sides.

Operator quickly changes to rehandling bucket and starts digging out under tracks.



After tunneling halfway under track, Gradall starts digging from other side.

Gradall digs under-track tunnel without hand labor

THIS TUNNEL under a siding is typical of the many different kinds of maintenance and construction jobs that are all in a day's work for the Gradall!

With its unique *arm-action* and positive hydraulic tool control, the Gradall works in —or out of—areas inaccessible to any other machine, working so accurately that hand labor is eliminated. Railroads find that a single investment in a Gradall gives them a machine that, with quick changes of attachments, handles a wide variety of jobs. They keep Gradalls busy cleaning tracks and roadbeds, widening cuts and fills, restoring embankments, trenching, excavating, grading, backfilling, and on many other jobs.

This multi-purpose machine can also cut *your* maintenance and construction costs—so contact your Gradall Distributor for a field demonstration.

Job completed fast with Gradall! Hazardous digging under siding by hand labor has been eliminated.

Gradall Distributors in over 75 principal cities in the United States and Canada

Gradall
DIVISION OF WARNER & SWASEY Cleveland
PRECISION MACHINERY SINCE 1880

YOU CAN PRODUCE IT BETTER, FASTER, FOR LESS WITH WARNER & SWASEY MACHINE TOOLS, TEXTILE MACHINERY, CONSTRUCTION MACHINERY

HERE'S WHY

Chief Engineers Choose . . .

Matisa

THE NEW STANDARD OF TRACK MAINTENANCE

PULL A TIE AND SEE!

The realistic way to answer a question is to "see for yourself!" Matisa suggests you check your present tamping on the proving ground. With a *Matisa-tamped* tie you will discover that the ballast is *precision-packed* not only under the tie, but directly *under the rail*—pull a tie and see!

Let us send you our latest Progress Report—and ask for a field trip on film *in your office!*

THE MATISA EQUIPMENT CORPORATION

TRACKWORK SPECIALISTS ALL OVER THE WORLD

224 South Michigan Blvd. • Chicago 4, Illinois

NEWS NOTES...

MAY 1953

...a resumé of current events throughout the railroad world

An announcement by the Association of American Railroads has revealed that Class I railroads spent $1,817,750,000 for fuel, materials and supplies during 1952. Of this amount, $182,253,000 was spent for rail and other track material. This was a decrease of $56,232,000 as compared with 1951.

•

Travel during 1952 by regularly scheduled domestic air lines was 6½ times more hazardous than travel by rail, according to figures recently published by the Bureau of Transport Economics and Statistics of the Interstate Commerce Commission.

•

Arrangements are being completed by some 200 exhibiting members of the Railway Supply Manufacturers Association for displaying $15 million worth of railway equipment and supplies at the Products for Railway Progress show to be held in conjunction with the A.A.R. conventions scheduled for the week of June 21-27 at Atlantic City.

•

March deliveries of new freight cars for domestic use totaled 6,679 units, compared with 7,780 in February and 8,159 in March 1952, the American Railway Car Institute and the Association of American Railroads have announced jointly.

•

The Great Northern has announced inauguration of a long-range installation program calling for extensive use of radio in the operation of freight trains and in major switching areas, and augmenting communications when storms or other unusual conditions interfere with wire systems.

•

The Santa Fe has started a program of rebuilding 800 refrigerator cars in company shops. The cars will be stripped and equipped with all-steel bodies, thus eliminating all such wood-bodied cars on the road.

•

The National Production Authority plans to install, on July 1, a new materials control system designed only to assure deliveries of enough steel, copper and aluminum for the Department of Defense and the Atomic Energy Commission. The new system would be the only materials control plan in effect after June 30 when the Controlled Materials Plan will be terminated.

•

Administrator James K. Knudson of the Defense Transport Administration hopes to convince the Atomic Energy Commission and the Federal Civil Defense Administration that some future nuclear explosion "should include opportunity to study the effects on a section of railroad track and some railroad rolling stock."

•

General Motors has constructed, at its Technical Center at Detroit, a 1,750-hp. experimental gas turbine.

Approximately $29 million has been earmarked for improvements in British Columbia in 1953 by the Canadian Pacific. Of the total, $17 million will be spent for new diesel units and the construction of diesel-servicing facilities. Other projects include the construction of a 7,000-ton specially designed rail-car ferry, also pier and new rail and ship terminal facilities.

•

In February 1953, Class I railroads placed in service 167 new locomotives, including 165 diesel units and two steam locomotives, the Association of American Railroads has announced. In February 1952, new locomotive units installed totaled 301.

•

Dr. William N. Leonard, professor of economics and head of the Department of Economics and Commerce of Pennsylvania State College, has been elected president of the Federation for Railway Progress.

•

The Union Pacific has begun work on a $4 million project at Kansas City, Kan., which includes construction of an entirely new inbound freight yard and conversion of the present yard for outbound business. In all, 42 miles of new tracks will be constructed. The project involves the grading of some 234,000 cu. yd. of earth and the installation of an extensive drainage system. A new general yard office and two sub yard offices will be constructed and extensive paging and intercommunication systems will be installed.

•

Railroad employment decreased 1 per cent—from 1,196,167 to 1,184,197—from mid-January to mid-February. The latter figure was 2.78 per cent lower than February 1952, according to the Bureau of Transport Economics and Statistics of the Interstate Commerce Commission.

•

Railway Supply firms will receive a large share of the 70 safety awards to be given at the Greater Chicago Safety Conference and Exposition (formerly known as the Midwest Safety Conference) on June 2-4.

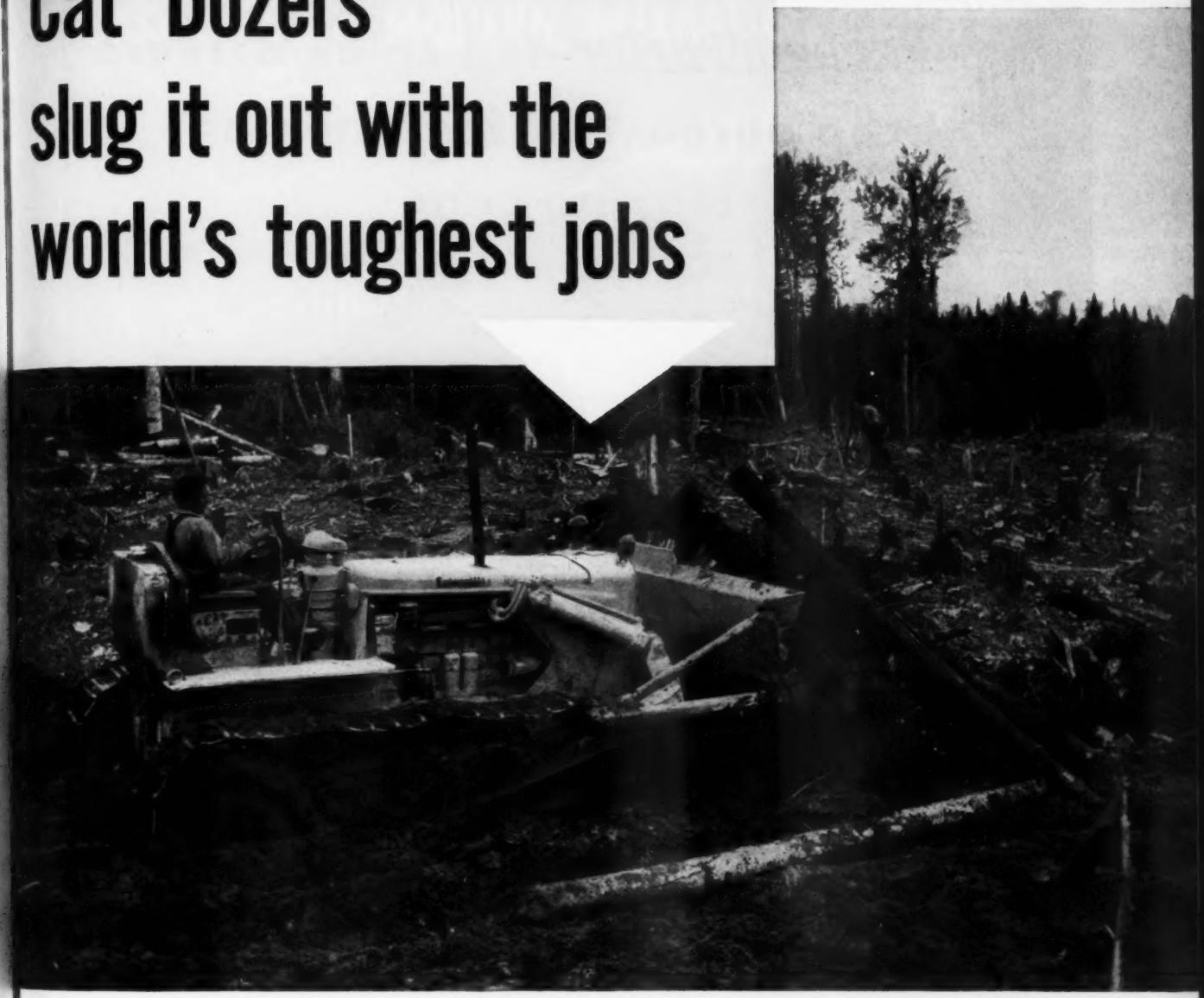
•

For the first time in history, the steel industry produced ten million tons of steel within a single month. The new production record was attained during the month of March this year.

•

ALSO WORTH NOTING—Robert M. Drysdale, Jr., has resigned as executive vice-president of the Federation for Railway Progress . . . The Denver & Rio Grande Western is spending $140,000 to convert 25 miles of narrow gage track, between Montrose, Colo., and Ridgeway, to standard gage . . . The C. J. Maney Company, Somerville, Mass., has been awarded a contract for work on a new yard on the New York, New Haven & Hartford at Massachusetts avenue in Boston . . . . Legh R. Powell, Jr., has retired as chairman of the board of the Seaboard Air Line at Norfolk, Va., but will continue with the company in a consulting capacity. No successor has yet been named . . . Allison W. Ledbetter has been elected chairman of the board of the Central of Georgia, succeeding Patrick B. McGinnis, who recently resigned.

Cat 'Dozers slug it out with the world's toughest jobs



A D6-No. 6A Bulldozer, owned by the Q.N.S.&L. Railway, clears land for a railroad grade near Seven Islands, Quebec, Canada.

WHEN the Q.N.S & L. Railway had to drive a right of way through the bush for a new line to the Canadian iron mines, it needed tough equipment. A Caterpillar D6 Tractor with No. 6A Bulldozer got the call, and it met the test.

There are many reasons why the big yellow 'dozers are chosen for jobs like this. They have no equal as earthmovers because the scientifically curved moldboard *rolls* earth instead of pushing it. Heavy box section reinforcements run the full length of the blade, giving added strength and rigidity. The cutting edge is of high carbon steel for strength and abrasion resistance.

Wherever strain or severe wear is likely to occur, parts are heat-treated to strengthen and toughen them. Because Cat Bulldozers have no overhead frame, the operator can see where he is going and watch the corners of his blade. And the high lift feature is especially useful in pushing over trees or gouging into hills.

Your Caterpillar Dealer has a complete line of sturdy Cat Bulldozers, matched to all tractor sizes. He'll be glad to demonstrate the unit you need for off-track use. And he'll back its long work life with reliable service and a full stock of genuine Caterpillar parts.

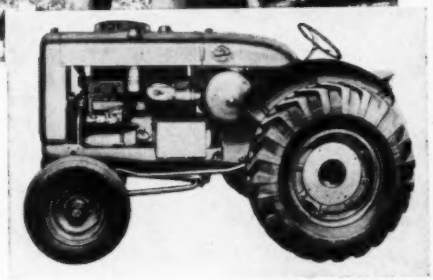
CATERPILLAR, PEORIA, ILLINOIS

CATERPILLAR

REG. U. S. PAT. OFF.

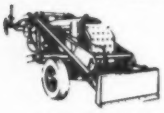
DIESEL ENGINES
TRACTORS • MOTOR GRADERS
EARTHMOVING EQUIPMENT

Pneumatractor–fed spike drivers keep abreast of fast-moving relaying gang

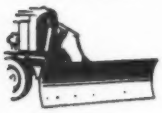


Meet SCHRAMM'S many-purpose *mobile* compressor that does many M-W jobs

FRONT END LOADER



BACKFILL BLADE



SNOW PLOW

TIE TAMPING

ROCK DRILL

Spike driving is only one way by which a railroad can use the *Pneumatractor's* easy off-track mobility. Next, this dependable compressor, with unit (motor-compressor) power plant and 105 cubic foot capacity, may be serving eight tampers on a spot tamping assignment or handling any of dozens of air jobs that may crop up on any railroad.

But that only begins to plumb the *Pneumatractor's* usefulness. As a powerful tractor, it is always ready for pulling or hauling. And hook on any of several auxiliary attachments and you have a specialized machine such as snow plow, post hold digger, front end loader, or "SKY-WORKER" for elevated jobs. Yes, a more useful and versatile tool with fewer idle hours, a *Pneumatractor* gives you greater investment return.

For more details about the *Pneumatractor's* many advantages and its interesting features, ask our Railroad Sales Department for a copy of bulletin NEU 53.

SCHRAMM, INC. *The Compressor People* **WEST CHESTER • PENNSYLVANIA**

1931-1952...MODERN BALLAST CONDITIONING

Proven

Over 21 Years

Complete

Ballast Conditioning Trains Entirely Self-Contained on Our Own Standard Railroad Equipment

R.B.C.C. five-unit trains do a thorough ballast conditioning job on *both sides* of the track in one pass, two center ditches, two shoulders, or one of each.

R.B.C.C. three-unit self-propelled trains (photo above) do a thorough ballast conditioning job on *one side* of the track *in one pass;* one center ditch, or one shoulder.

No other equipment for outfit cars or dirt handling need be furnished by the Railroad. No railroad cars are tied up, as our equipment with complete facilities stores and disposes of all dirt removed from fouled ballast. Each train contains a complete maintenance shop and store room.

One track only is occupied by these trains to do a thorough job of ballast cleaning, complete excavating, and dirt disposal. Adjoining tracks can be cleared *in one minute* when necessary.

BEFORE

AFTER

BEFORE

AFTER

RAILWAY BALLAST CONDITIONING CORPORATION

Picture Proof of thorough ballast conditioning. Unretouched photos of actual contract service show before and after cleaning with our equipment.

R.B.C.C. ballast cleaning and excavating service, complete with personnel and equipment, is handled on contract basis.

RAND TOWER, MINNEAPOLIS, MINNESOTA • METROPOLITAN BANK BLDG., WASHINGTON, D.C.

Only Tournacrane carries its f

Goes anywhere, works and travels along right-of-way — eliminates rail cranes on scattered jobs

Why call out a rail crane for scattered lifting jobs when you can do the job faster and considerably cheaper with a one-man-operated, drive-anywhere Tournacrane? This self-propelled crane picks up *and carries* capacity loads anywhere . . . travels over pavement, across tracks, through mud or sand, cross country. You go anywhere, anytime . . . need no work train, no trailer and truck. You lift full loads without jacks or outriggers . . . operate crane from driver's cab.

Makes fast, self-powered moves

With fast, rubber-tired speeds (28 to 36 mph, depending on model) this one-man work crew requires only a phone call to get rolling on to a work assignment. With Tournacrane, a mile is only a couple of minutes away. Operator just hops on and goes! You eliminate time-consuming loading and unloading of equipment. When mainline traffic barrels through, Tournacrane drives off right-of-way . . . a minute or so after the train goes by, is working again. Rig crosses tracks without blocking . . . does no damage to rails, switches, etc. Big, low-pressure tires deflect to move load evenly over obstructions . . . do not chamfer ties, trip or damage block signals.

Works in tight quarters

Tournacrane's retractable boom combines advantages of "big-boom" reach with "small-boom" load control. "Telescoping" jib boom extends or retracts along elevator track at touch of a switch. In carrying heavy loads, retracted boom holds load in short-couple position . . . eliminates swing on long hoist lines. Boom is a rigid box-structure, has no "whip", no light structural members to bend . . . gives added strength for lifting heavy loads with boom in horizontal position.

Fast, safe boom control

Smooth-operating electric motors at point-of-action power all crane movement . . . completely eliminate manual controls. Operator simply presses fingertip dashboard switch and gets instant, sure response.

Year-round interchangeability

And here's another cost-cutting advantage: You can easily interchange other LeTourneau trailing units behind same 2-wheeled prime-mover. For ¼ of original price, you can add Carryall-Scraper, Bottom or Rear-Dump Hauler to your fleet. Flat-bed self-loading trailer is also available. You can change these trailing units in a few hours and you're ready to tackle another type of work . . . keep your equipment working full-time. Send for all the facts today.

This Tournacrane handles yard work for a southern railroad. Speedy one-man work crew can be dispatched any time to help on right-of-way construction and maintenance.

4 Models

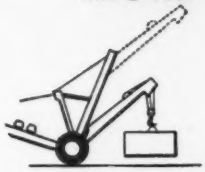
Capacity	Max. Reach	Max. Lift
10 ton	35′	33′
20 ton	33′ 10″	33′ 10″
30 ton	26′	25′
40 ton	26′	23′ 6″

LETOURNEAU LET EQUIPMENT

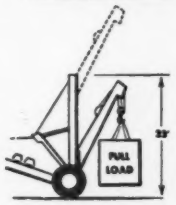
Tournacrane, Carryall—Trademark, Reg. U.S. Pat. Off. DC-138-RE

ts full load

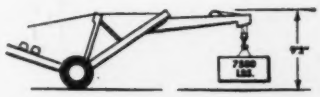
Boom retracts for load control . . . carries BIGGER loads MORE places!



1. Carries load close to ground with short line to prevent whipping.



2. Travels with capacity load . . . carries it under low overhead. Needs no blocking or outriggers.



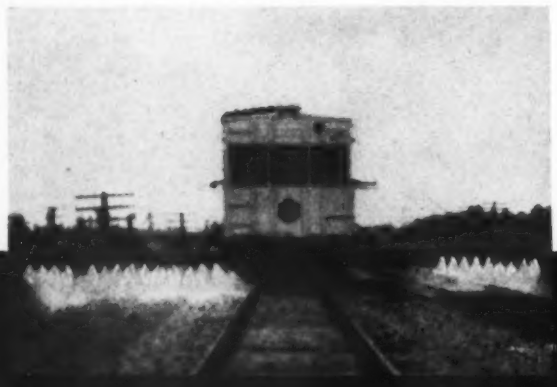
3. Spots BIG loads through LOW overheads. Can work through doorway, reach horizontally into a boxcar or into tunnels.

R. G. LeTOURNEAU, INC.
Peoria, Illinois

Research-Proved

HERBICIDES

for
Roadbed
and
Right-of-Way



The R. H. BOGLE Company

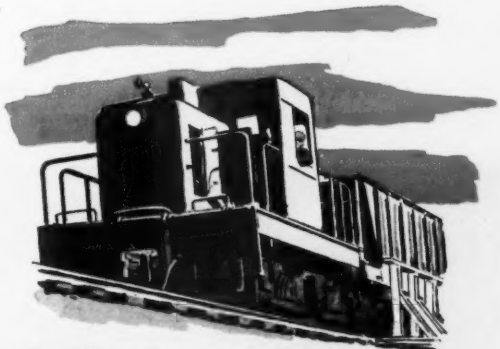
ALEXANDRIA, VA.

are engineered to make light work of tough jobs

Progressive, eyes-ahead engineering is one of the big reasons why so many railroad men pick Cummins Diesels for dependability.

Consider Cummins' exclusive system of fuel injection and metering—an important factor in the unequalled performance records established by lightweight, high-speed (60-660 h.p.) Cummins Diesels. No other Diesel fuel system is so simple . . . so rugged! It delivers a uniform, properly prepared fuel charge to every cylinder. All under low pressure—no chance of bursting and leaking fuel lines.

Your Cummins dealer will be glad to tell you more about the exclusive fuel system and other engineering advantages built into every Cummins Diesel. He is an expert who knows the requirements of your job. He heads up a specialized parts and service organization—equipped to handle all your diesel power needs. Call him today . . . or write!

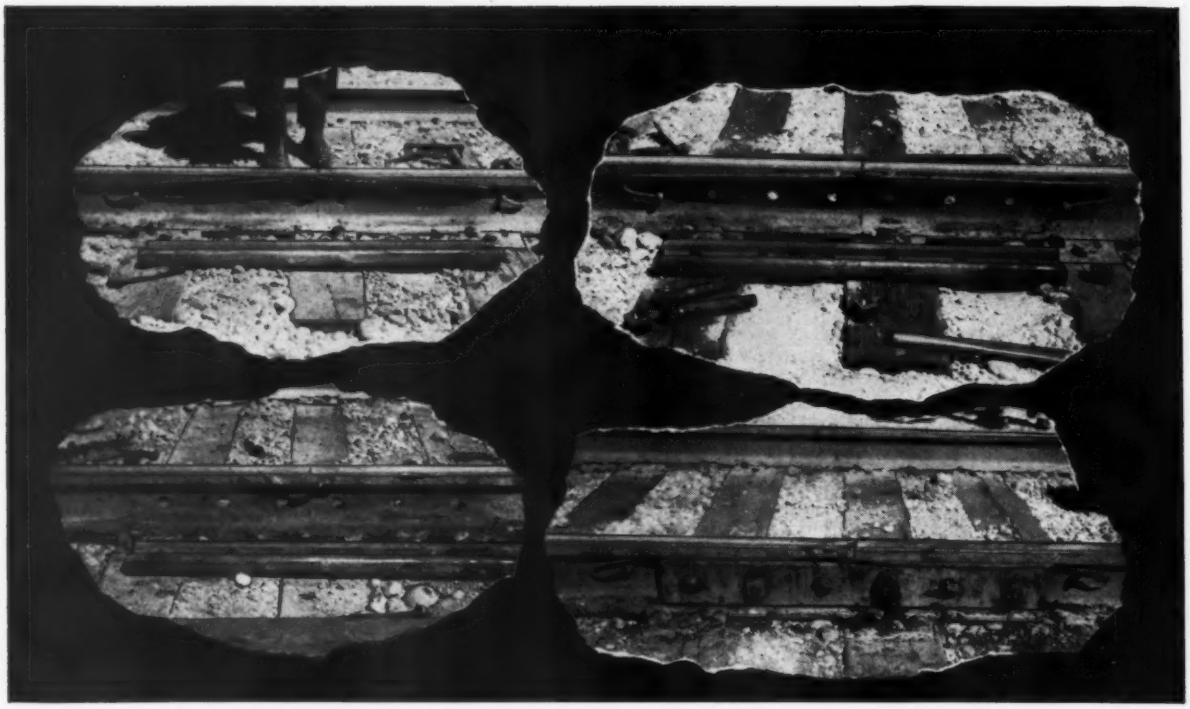


***Leaders** in rugged, lightweight high-speed diesel power!*

CUMMINS

CUMMINS ENGINE COMPANY, INC.
Columbus, Indiana

Export: Cummins Diesel Export Corporation, Columbus, Indiana, U. S. A. • Cable: CUMDIEX



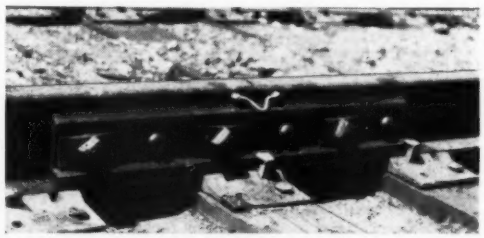
It **costs** *money* **not to protect** *rail joints*

Many leading railroads have found that *Preventive Maintenance* costs less than rail and joint replacement—less in labor and materials. The same is true of other rail locations such as street and highway crossings—station platforms—motor car set-offs—industrial trackage located in streets—rails in tunnels.

How to **save** *money with NO-OX-ID*

The remedy is simple—one-coat NO-OX-ID rust preventive does the job. Merely remove rust scale and coat with NO-OX-ID. This approved method will reduce service failures and cut maintenance to a minimum. Write for illustrated bulletin giving complete information on the NO-OX-ID method of rail joint protection.

DEARBORN CHEMICAL COMPANY
Merchandise Mart Plaza • Chicago 54, Illinois



Dearborn
TRADE MARK

DEARBORN CHEMICAL COMPANY
MERCHANDISE MART PLAZA
CHICAGO 54, ILLINOIS

THE ORIGINAL RUST PREVENTIVE

NO-OX-ID

SPERRY
ULTRASONIC SERVICE

for detection of rail end defects
within joint bar limits

NEW LOW PRICE
*** 7 ½¢** PER JOINT

Our skilled operators using latest equipment assure you of HIGHEST QUALITY TESTING AT LOWEST COST

*** BASED ON AN AVERAGE BILLING OF $21 PER MILE TESTED**

now

CUTS 1953 TESTING COSTS

TYPICAL RAIL END DEFECTS INEXPENSIVELY LOCATED BY THE ULTRASONIC CAR

BOLT HOLE CRACK

HEAD AND WEB SEPARATION

SPERRY RAIL SERVICE

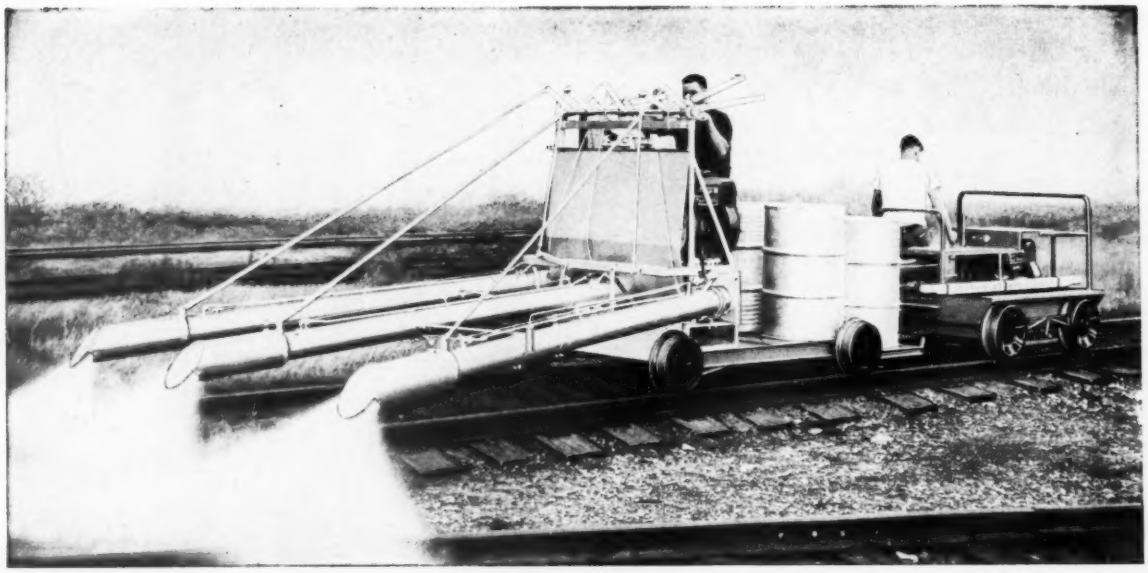
DIVISION OF SPERRY PRODUCTS, INC.

Danbury, Connecticut

NEW YORK, N.Y. CHICAGO, ILL. ST. LOUIS, MO.

Sperry

FIRST IN RAIL TESTING



Model PB-B

DESTROY WEEDS *with* WOOLERY WEED BURNERS

Model PB-B

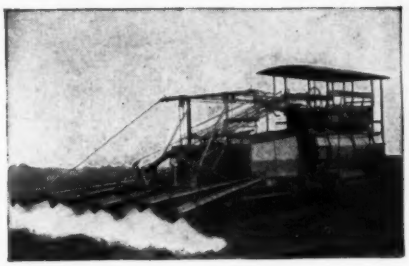
WOOLERY WEED BURNER trailer type (shown above) can be towed by motor car. Three burners clear a swath 15 feet wide on first trip and if required can be widened to 25 feet with burners extended on second trip.

MODEL WBZ

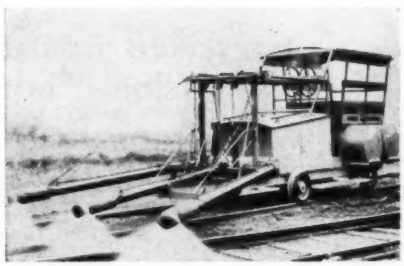
WOOLERY GIANT OCTOPUS is the favorite for heavy duty requirements. Will destroy a swath 25 feet wide in one trip or up to 35 feet with burner arms extended on second trip.

Model WBF

WOOLERY MIDGET OCTOPUS is recommended for normal requirements and has all the features of its bigger brother. Has three burners instead of five and will burn a swath 15 feet wide on first trip and 25 feet on the second.



Model WBZ



Model WBF

Manufacturers of Tie Cutters, Tie End Removers, Tie End Trimmers, Power Bolt Tighteners, Spike Drivers, Motor Cars, Push Cars, Tool Transporters, Weed Burners, Extinguisher Cars, Chemical Sprayers, Tie Plate Spacers, Creosote Tie Sprayers, Rail Nippers, Flangeway Cleaners, Rail Joint Oilers, Power Joint Lubricators.

WRITE FOR COMPLETE INFORMATION

SINCE 1917 RAILWAY MAINTENANCE EQUIPMENT

Woolery MACHINE COMPANY

2919 COMO AVE. S. E. MINNEAPOLIS 14, MINN.

Woolery Weed Burners are available in 4 sizes to meet your needs for effective, low cost roadbed maintenance. Burner jets are individually controlled and will destroy ALL types of weeds on roadbeds, embankments and ditches. Can also be used in winter for melting ice and snow.

Exclusive Export Representatives
Pressed Steel Car Co., New York, N. Y.

LOADING — High reverse speeds and power-boosted steering make these "PAYLOADERS" big producers on loading work . . . have dumping height to load big trucks.

DIGGING — Ditch-cleaning, bank-widening and other grading and excavating tasks are regular assignments for 4-wheel-drive "PAYLOADERS". They drive quickly to the job.

BACKFILLING — The regular bucket is widely used for fast backfilling work, but this blade attachment is also available.

CARRYING — This Crane Hook is one of several attachments that greatly multiply "PAYLOADER" usefulness.

MASTER OF MANY JOBS

Big 4 wheel drive "PAYLOADERS" are proving their value and versatility to the railroads as they are to so many other industries. They are multi-purpose handymen for all sorts of maintenance-of-way work and in the yards and shops. They excavate, load trucks and backfill . . . load and plow snow . . . clean ditches, grade and spread . . . push, pull, lift and carry . . . walk readily over rails, on ties, up banks. These outstanding tractor-shovels have four speeds in reverse as well as forward, ranging from a powerful 2 M.P.H. crawl up to 27 M.P.H. transport speed.

They've got power-boosted steering . . . full hydraulic fingertip bucket control . . . automatic tip-back bucket motion . . . unsurpassed operator visibility. And there's a choice of gasoline or diesel power up to 90 H.P. Once you've seen a "PAYLOADER" in action, you'll realize what they can do on *your* jobs. See your "PAYLOADER" Distributor today or write The Frank G. Hough Co., 751 Sunnyside Ave., Libertyville, Illinois.

WRITE for full information on any of the "PAYLOADER" models: FourWheel Drive HM — 1½ yd. and HR — 1 yd.; Rear Wheel Drive Models HY — 1¼ yd., HF — ¾ yd., HE — ½ yd.; Front wheel drive Models HAH — 15 cu. ft., HA — 12 cu. ft.

SAY "HUFF"

PAYLOADER®

THE FRANK G. HOUGH CO. — SINCE 1928

THE NORDBERG *Power Jack*

*"Mechanical Muscles"**

for all raising-reballasting jobs

SPEED, accuracy, and ease of handling on or off the track are basic advantages of the Nordberg *Power Jack* for reballasting, general surfacing and all other operations where raising of track is involved. Lifting is accomplished by means of hydraulic rams actuated by oil under pressure. Alignment is maintained even when making heavy and high lifts. One Nordberg *Power Jack* easily keeps ahead of any tamping gang.

It will pay you to take advantage of the "mechanical muscles" of the Nordberg *Power Jack* to reduce maintenance costs.

For details, send for BULLETIN 138.

* The Nordberg *Power Jack* will handle any kind of track, and work in any kind of ballast . . . and will pay for itself in raising only 13.8 miles of track.

*Copyright 1952, Nordberg Mfg. Co.

R852-R

Use NORDBERG *"Mechanical Muscles"** to do a Better, Faster Maintenance Job at Lower Cost . . .

ADZING MACHINE • CRIBEX® • BALLASTEX® • SCREENEX® • SPIKE PULLER
GANDY—TIE PULLER AND INSERTER • POWER JACK • POWER WRENCH
TIE DRILL • RAIL DRILL • RAIL GRINDERS • TRACK SHIFTER • DSL YARD CLEANER

NORDBERG MFG. CO., *Milwaukee, Wis.*

NORDBERG MACHINERY

protect this 7 dollar investment

with this 7 cent insurance

WITH the cost of crossties averaging about $7 each, it's wise to prevent premature failure from checking and cracking. You can insure against such failure with anti-checking irons at an installed cost of just 7 cents per tie, using two irons, or 12 cents per tie, using four irons.

Only by using anti-checking irons can you *make sure of every tie* in advance. Taking corrective measures after ties have split costs far more.

Sharon crinkle-ribbed irons are designed so that the iron stays in place, despite vibration and severe service. Once installed, they provide permanent anti-checking insurance for the life of the ties. For safety and lower maintenance cost, specify Sharon anti-checking irons.

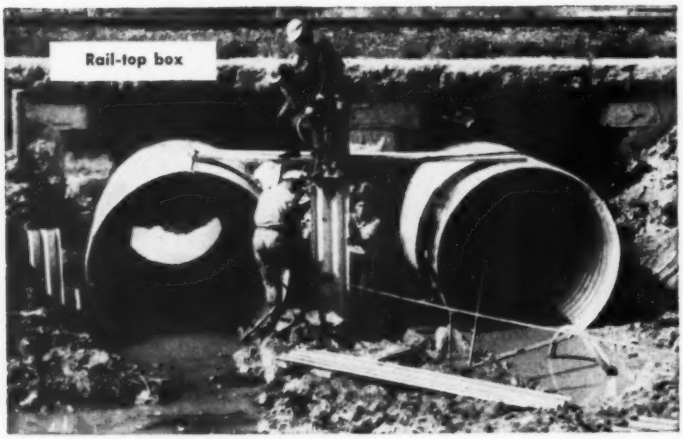
ANTI-CHECKING IRONS

Corrugations on Sharon crinkle-ribbed irons increase holding power approximately 25%. They can be driven at any time during seasoning without use of special tools or expensive equipment.

For booklet and/or samples, write Brainard Steel Division, Sharon Steel Corp., Department HH-5, Griswold Street, Warren, Ohio.

Brainard
SHARONSTEEL
STEEL DIVISION
SHARON STEEL CORPORATION

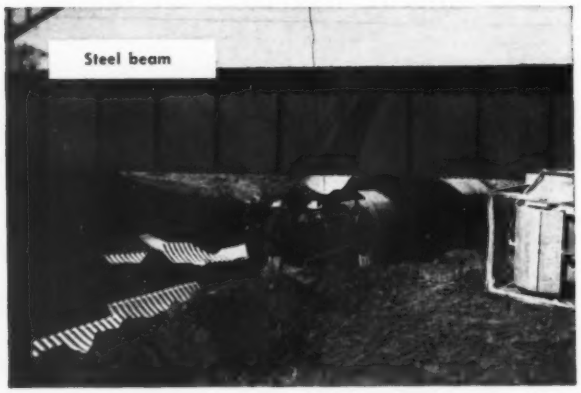
Multi-Plate
replaces 5 types of railroad bridges



Thinking of replacing small railroad bridges? Whatever the type or size, you can probably do it faster and easier with an Armco MULTI-PLATE Structure.

Want proof? Shown here are five major types of small railway bridges — all replaced by Armco MULTI-PLATE Pipe. And usually the replacement is completely installed without a single minute's delay. Traffic stays on schedule.

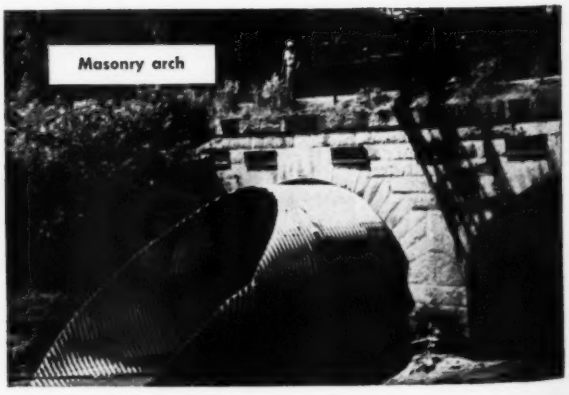
All MULTI-PLATE Drainage Structures — Pipe, Arch and Pipe-Arch — come in curved, corrugated metal sections. Assembly is a simple matter of bolting these pre-engineered sections together with standard structural wrenches. And the whole job can be handled by regular labor crews.



Because MULTI-PLATE is quickly and economically installed by inexpensive labor; does not delay traffic and requires practically no maintenance — it is your most economical solution to small bridge replacement problems.

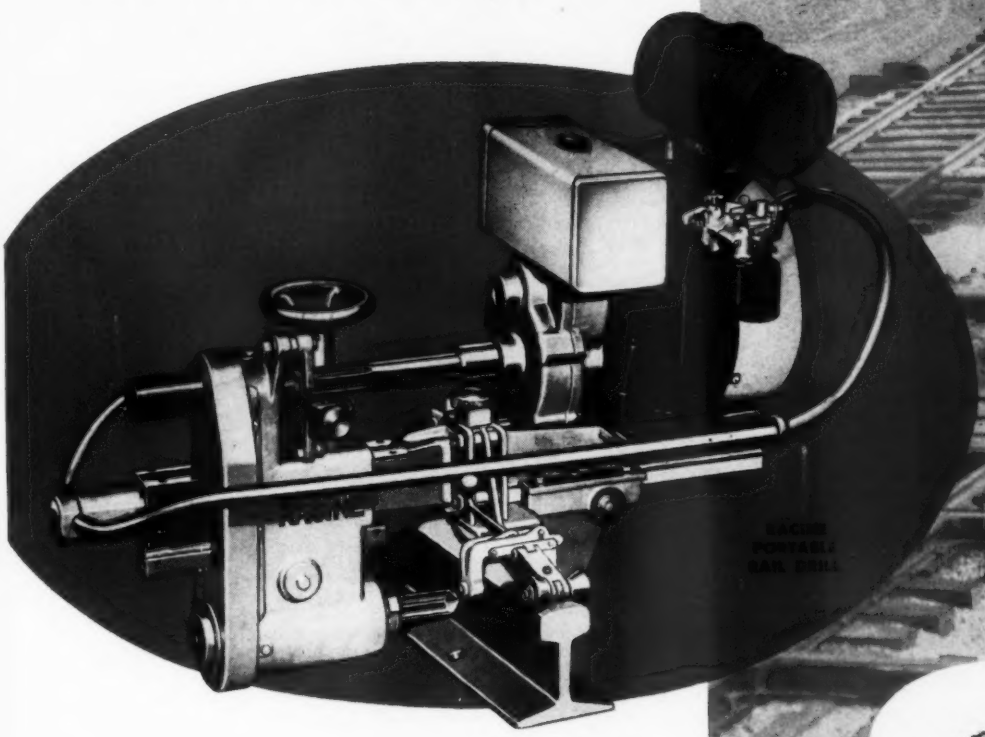
These drainage structures are available in a wide selection of sizes and gages. For more details, write us. Armco Drainage & Metal Products, Inc., 3183 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

Armco MULTI-PLATE Structures ARMCO

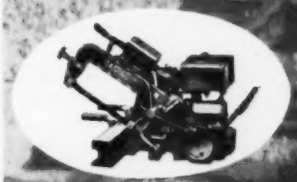


You too can reduce track maintenance cost with

RACINE PORTABLE RAIL TOOLS



- **LIGHT IN WEIGHT (only 165 lbs.)** — Mounted on rollers without outboard supports, this drill can be handled and operated by one man.
- **POWERFUL — FAST** — Finished holes can be made in one to two minutes depending on drill size and web thickness. Handles all size drills — fits all rails.
- **AUTOMATIC POWER FEED** — Special type automatic power feed insures predetermined drilling time per hole. Definite output per man-hour can be established. Drill life is greatly extended because Racine's controlled power feed prevents over-feed and drill breakage.
- **PRECISION BUILT** — An accurate, rugged drill press designed on horizontal lines. Gas-engine powered and built to machine tool precision.



RACINE HYDRAULICS & MACHINERY, INC.

No. 293 of a series

RAILWAY TRACK and STRUCTURES

SIMMONS-BOARDMAN PUBLISHING CORPORATION

79 WEST MONROE STREET
CHICAGO 3, ILL.

Subject: Role of Advertising

May 1, 1953

Dear Readers:

I sometimes wonder how many of you have given thought to the function and importance of the advertising that appears in this magazine. We frequently hear comments from readers to the effect that they read each issue from cover to cover, which means, of course, that they devote as much attention to the advertising pages as they do those in the editorial section. This is as it should be, because anything less than such thorough reading means that you are not getting the fullest possible benefit from your subscription.

Advertising is frequently said to be one of the most powerful forces responsible for the high standard of living that has come to be accepted as an inherent characteristic of our free enterprise system. It is not difficult to trace the source of this power. When a product is advertised, a demand for it is created. The magnitude of this demand depends on several factors, including the extent and effectiveness of the advertising, the degree to which there is a need for the product advertised and the quality of the product itself in comparison with others in competition with it. The effect is to put into the hands of people things that make life easier or more enjoyable; and these benefits are made available to the many because the large demand created by advertising permits mass-production methods to be used in manufacturing, with resulting lower costs to the consumer.

This line of reasoning is most frequently mentioned in connection with the advertising of so-called consumer goods, i.e., household appliances, automobiles, cosmetics, etc., such as are advertised in popular magazines, and by radio and television. However, it is hardly less applicable to devices, materials and machines used by industry and advertised in trade magazines, such as R.T.& S. and other Simmons-Boardman publications. The major difference is that the products advertised in the trade press, rather than being intended for the comfort or convenience of individuals, are offered because the manufacturers believe that, in one way or another, they help to reduce the cost of doing business.

In the advertising pages of this magazine, month after month, you will find information on the characteristics, applications and advantages of the many products that have been developed specifically for use in your work, and with the idea of helping you to do a better job. Obviously, because the advertiser is in business to make a profit, his primary purpose in buying advertising space is to sell his products. But at the same time he knows that his product must have merit; otherwise you're not going to buy or specify it and he isn't going to stay in business. There is ample reason, therefore, why you should read the advertising pages regularly and thoroughly, reserving to yourself, of course, the right to weigh and compare the merits of competing products.

Another important consideration is that revenue from advertising, defraying as it does a large share of the publishing cost, makes it possible to bring to you the magazine at only a small fraction of its total cost. In other words for a nominal subscription rate you obtain a magazine in which the advertising and editorial pages comprise an integrated service, which, if properly used, can prove of great value in your efforts to do a good job for yourself and your company.

Yours sincerely,

Merwin H. Dick

Editor

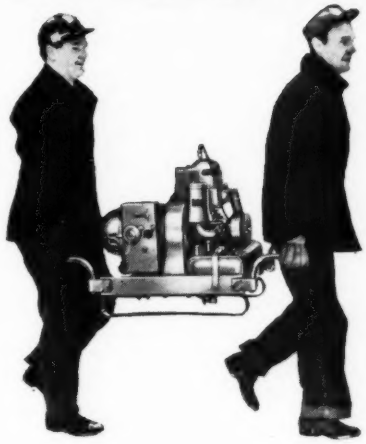
MHD:lw

Members: Audit Bureau of Circulations and Associated Business Publications

ONLY 220 LBS.

Dual Voltage 115/230v.

New HOMELITE 5KW GENERATOR for OPERATING POWER TOOLS



The New Homelite 5 KW Generator weighs only 220 pounds, complete with gasoline engine. Equipped with adjustable handles for easy carrying by 2 or 4 men.

Here is a new Homelite Generator that measures up to all the requirements for greatest efficiency with power tool operations. It's small, compact . . . light enough for two or four men to carry . . . and it gives you both 115 and 230 volt current up to its conservatively rated 5,000 watt capacity. With this new generator you can have all the power you need to operate light or heavy power tools any place you need it. You can operate electric saws, grinders, drills, routers, sanders, table or radial saws . . . with no drain on the generator or the efficiency of your tools.

You can operate these tools, or floodlights, when you need them, any place without worry over your power supply.

Write, for complete information on this new, rugged, dependable, high-powered Homelite Generator, today.

Manufacturers of Homelite
Carryable Pumps • Generators
Blowers • Chain Saws

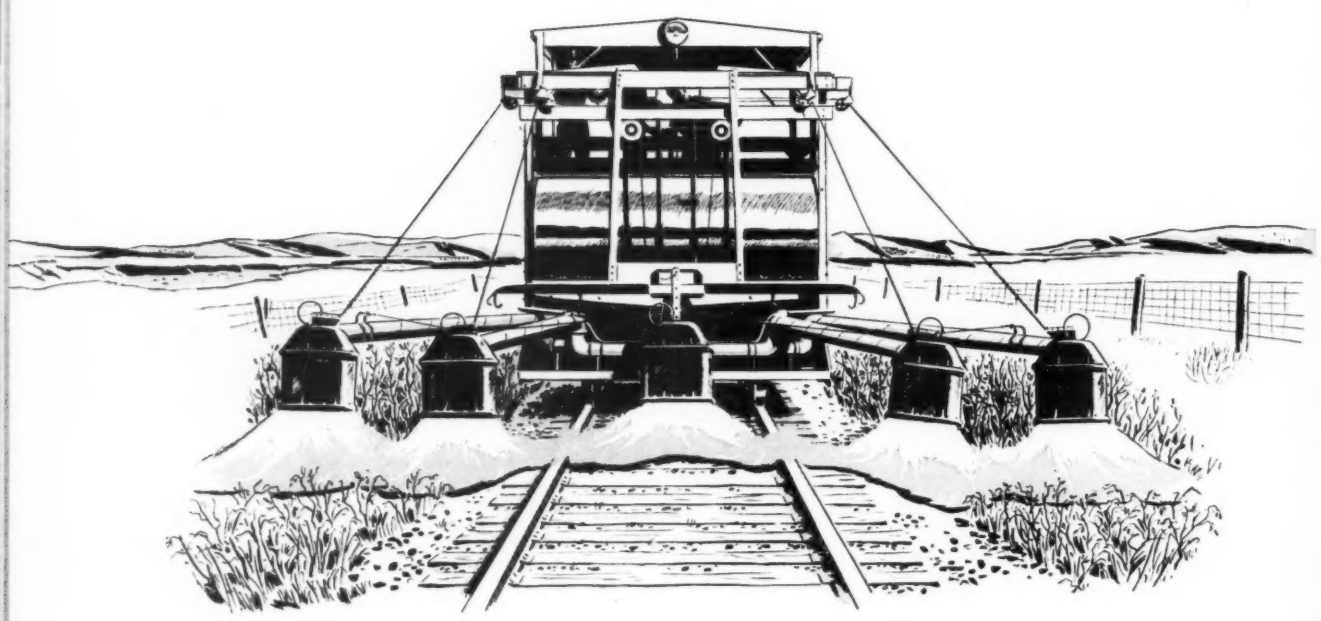
Canadian Distributors: Terry Machinery Co., Ltd., Toronto, Montreal, Vancouver, Quebec.

PERFORMANCE • DEPENDABILITY • SERVICE

HOMELITE
CORPORATION
205 RIVERDALE AVENUE • PORT CHESTER, N. Y.

Fairmont RAILWAY MOTOR CARS AND WORK EQUIPMENT

Its name guarantees its quality!



Perhaps the most important part of any piece of Fairmont equipment is the nameplate which identifies it. For it serves as its owner's guarantee that here is the finest product of its kind as it is practical to produce. The product illustrated above is convincing evidence of this fact. It's the W55 Series A Weed Burner—one of the most thorough and efficient open flame weed killers ever designed. Its intense flame reaches and destroys vegetation, regardless of road-bed contour—and its unusual dependability and operating economy place it among the most practical units of its type. The burner heads can be positioned quickly and easily . . . making the W55 Series A Weed Burner ideal for use in clearing switches and retarders of snow during the winter months. Here, indeed, is proof of Fairmont quality . . . and of Fairmont's ability to create superior equipment for the maintenance of the world of rails!

FAIRMONT RAILWAY MOTORS, INC., FAIRMONT, MINNESOTA

Performance ON THE JOB COUNTS

MANUFACTURERS OF INSPECTION CARS, SECTION AND GANG CARS, HY-RAIL CARS, MOTOR CAR ENGINES, PUSH CARS AND TRAILERS, WHEELS, AXLES AND BEARINGS, MOWERS, BALLAST MAINTENANCE CARS, WEED BURNERS AND EXTINGUISHER CARS, DERRICK CARS, OIL SPRAY CARS, GROUTING OUTFITS, WEED SPRAY CARS, TIE SPRAYERS, TIE REMOVERS, TIE INSERTERS

Published on the first day of each month by the

SIMMONS-BOARDMAN PUBLISHING CORPORATION

79 West Monroe St., Chicago 3

•

New York 7,
30 Church Street

Washington, D. C., 4
1081 National Press Bldg.

Cleveland 13,
Terminal Tower

Portland 5,
514 Terminal Sales Bldg.

San Francisco 11,
244 California Street

Los Angeles 17,
1127 Wilshire Blvd.

Dallas 4,
2909 Maple Ave.

•

James G. Lyne, *President*, Samuel O. Dunn, *Chairman Emeritus*, J. S. Crane, *Vice-President and Secretary*. C. Miles Burpee, Harry H. Melville, C. W. Merriken, John R. Thompson, William H. Schmidt, Jr., Fred W. Smith, John S. Vreeland, *Vice Presidents*. Robert G. Lewis, *Assistant to President*. Arthur J. McGinnis, *Executive Vice-President and Treasurer*. Ralph E. Westerman, *Assistant Treasurer*.

•

Subscription price to railroad employees only in the U.S., U.S. possessions and Canada, $1.50 one year, $2 two years, payable in advance and postage free. Subscription price to railroad employees elsewhere in the Western Hemisphere, $5 one year, $10 two years. All other countries, $7 one year, $14 two years. Single copies 50¢. Address correspondence concerning subscriptions to Robert G. Lewis, Assistant to President, 30 Church Street, New York 7.

Member of the Associated Business Papers (A.B.P.) and of the Audit Bureau of Circulations (A.B.C.), and is indexed by Engineering Index, Inc.

PRINTED IN U.S.A.

RAILWAY TRACK and STRUCTURES

TRADEMARK

VOL. 49, NO. 5 MAY, 1953

Editorials 465

Passengers—Machine Lubrication—Station Grounds

Prestressed Concrete Spans Used for Viaduct 467

How the British Railways overcame restrictions and satisfied civic pride in replacing an 86-year-old timber structure.

Practical Uses of Research Findings 470

G. M. Magee, director of engineering research, Engineering Division, AAR, suggests ways of putting test results to practical use

What Savings from Butt-Welded Rail? 474

Based on the long awaited report of the Subcommittee on Economics of the AREA's Special Committee on Continuous Welded Rail

Cribbers Help WP to Lower the Track in a Tunnel 476

How two cribbing machines were used on a project designed to increase overhead clearance and improve intolerable track conditions

In 1952—$1 Billion in Deferred Maintenance 479

Abstract of the 1952 edition of the "Railroad Maintenance Report" issued by the Engineering Section of the ICC's Bureau of Valuation

News Briefs in Pictures 480

MP's new coal transfer facilities at Ford, Ill.—Production records set on T&P welded-rail project—MP line change at Glen Park, Mo.

What the Answer 481

Gas-Agitation Control of Oil Fires
Highway Trailers for Moving Machines
Expansion Bearings for Steel Bridges
How to Keep Work-Train Expenses Low
Meaning of Lumber Classifications
Qualifications of a Yard Foreman

Products of the Manufacturers 488

News of the Month 492

MERWIN H. DICK
Editor

HENRY E. MICHAEL
Associate Editor

FRED W. SMITH
Business Manager

RADFORD E. DOVE
Associate Editor

RALPH M. SCHMIDL
Associate Editor

Multiply muscle power with

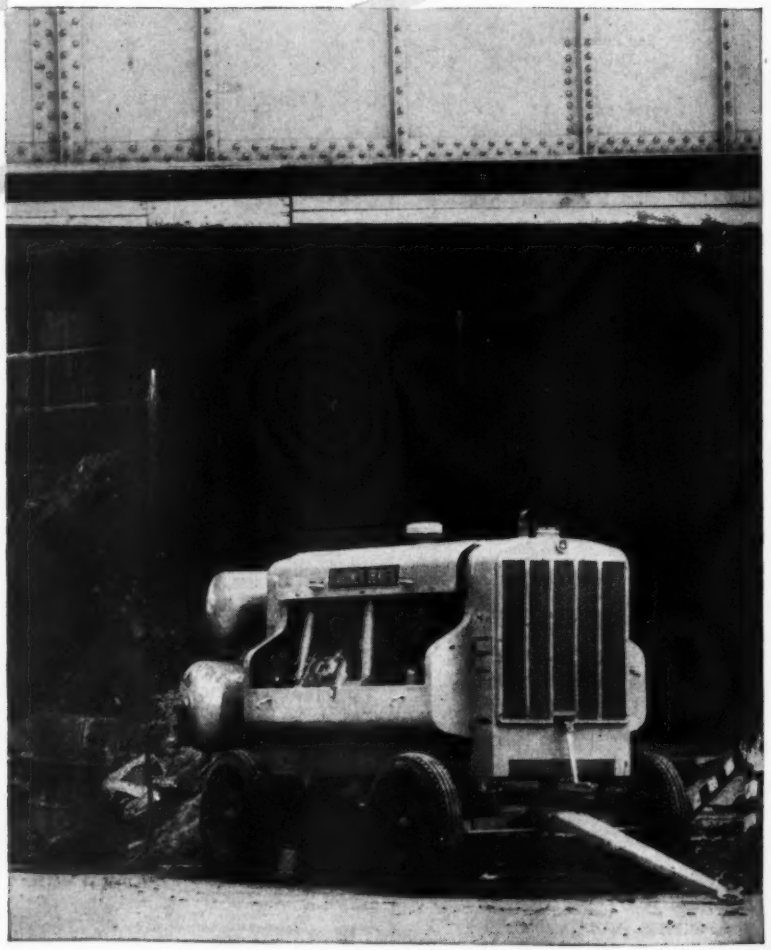
GARDNER-DENVER Air Power

Sheeting Drivers

Clay & Trench Diggers

Backfill Tampers

Paving Breakers



Portable Compressors

Gardner-Denver Portable Compressors for continuous air supply any day in the year—at any altitude.

Gardner-Denver Air Tools for easy holding—safe handling—low operating and maintenance costs.

Get the complete facts and see! Write today.

SINCE 1859

GARDNER-DENVER

Gardner-Denver Company, Quincy, Illinois
In Canada: Gardner-Denver Company (Canada), Ltd.,
14 Curity Avenue, Toronto 13, Ontario

THE QUALITY LEADER IN COMPRESSORS, PUMPS AND ROCK DRILLS

RAILWAY TRACK and STRUCTURES

Editorial Comment

Passengers —

Engineers Can Help Win Them

Engineering and maintenance officers are generally not prone to accept much responsibility for the loss of railroad passenger business to buses, air lines and the private automobile. It is true that most of the shortcomings of railroad service that are blamed for this loss of business are far outside the field of responsibility of the engineer. Yet, is it possible that we are taking too much for granted if we assume that the engineer or the maintenance man can do nothing to make railroad passenger service more attractive to the public?

A clue to the answer to this question may be found in a recent address by Anthony F. Arpaia, who, as a member of the Interstate Commerce Commission, may be presumed to have given the matter considerable thought. In the course of his remarks he listed "the most trying experiences of train travel." There were six items on his list, most of which dealt with such matters as inadequate porter service, the indifference of train-service employees, and the shortcomings and expense of dining-car service. But he got pretty close to home when he said that "drab, dark and gloomy" stations which are "as inviting as a mausoleum," being "drafty, poorly arranged and badly lighted," comprise one of the "most trying experiences."

This indictment of stations by Mr. Arpaia cannot be dismissed with a shrug. Maybe it is a little extreme, but the fact is that many passenger stations throughout the country come pretty close to fitting this description. It is true that much has been done to modernize and otherwise brighten up passenger stations, but the job has by no means been finished. And this is an aspect of railroad passenger service for which engineering and maintenance officers have a high degree of responsibility. Whether it's a new paint job, complete remodeling, or replacement with a new structure that's indicated, the engineering officer can have a great deal of influence in bringing about the changes required to give the traveler a more favorable impression of railroad service.

Mr. Arpaia made two specific suggestions which seem to be addressed particularly to engineering officers. These were that ample parking space be provided adjacent to suburban stations, and that conveyor systems be installed to handle baggage from station entrance to train side. The latter suggestion will have particular appeal for anyone who has had to carry a heavily-laden two-suiter fifteen or more car lengths in getting to or from his assigned space.

The contributions that engineering and maintenance forces can make toward more attractive passenger service are not, of course, limited to stations and adjacent facilities. The degree of perfection of the line and surface of the track is certainly a factor in determining whether a patron is going to have pleasant or unpleasant memories of a recent trip. While such activities as right-of-way grading, vegetation control and general policing of the properties are motivated primarily by other considerations, a secondary benefit is to improve the appearance with a consequent favorable effect on the passenger.

Sufficient has been said here to make the point that engineering and maintenance officers cannot assume that they have no responsibility for increasing the attractiveness of railroad travel. A definite realization on their part of the nature and importance of these responsibilities would be certain to have a constructive influence in winning passenger business for the railroads.

MACHINE LUBRICATION—

Aided by A.R.E.A. Committee Report

IF THE RAILROADS are to realize the return that should be expected from their investment in work equipment and roadway machines, it is imperative that the machines be kept working. This cannot be accomplished unless they are adequately and correctly lubricated—at the right time with the right lubricant. However, on every hand, the gears are whirring on machines of every description, some large, others small, some complicated, others simple. To lubricate each adequately with just the right lubricant would seem to be a task.

Realizing this, the machine manufacturers, whose reputation must necessarily depend upon satisfactory service from their machines constantly stress the desirability of lubricating them in accordance with the instructions contained in operating manuals. The producers and refiners of petroleum products, along with striving to improve their products, also have staffs of lubricating engineers who study their customers' problems and recommend suitable lubricants to solve them.

All these recommendations, although very helpful, have made the subject of lubrication so complex that all too many machine operators appear to "throw up their hands in frustration."

To simplify this important problem, a subcommittee of A.R.E.A. Committee 27—Maintenance of Way Work Equipment—presented a report at the March convention on "Instructions for Lubrication of Work Equipment." According to its chairman, N. W. Hutcheson, engineer of work equipment, C&O, this subcommittee "made no attempt to cover the entire field of lubrication nor to compile a complete list of instructions for the many types of equipment now in use."

Instead the subcommittee confined its report "to a list of general instructions that can be used as a guide for any railroad that so desires to prepare a more complete set of instructions to be issued to machine operators as a supplement to the manufacturers' manuals." In addition, the report includes two charts which can also be used as guides. The first chart would itemize all the machines on a given railroad and show, by railroad item number, the lubricant to be used on each part. The second chart is designed to assist a machine operator in obtaining in an emergency a suitable lubricant from commercial dealers. This latter chart, when made up by an individual railroad, should fill a need that has long existed. With it available a machine operator who cannot wait for a shipment from a storehouse, can get the right lubricant from the nearest dealer.

All men who are in direct charge of work equipment and have the responsibility of seeing that it is kept in service, agree that the intensity of their maintenance problems is in direct proportion to the care with which their machines are lubricated. To these men, Committee 27's report on "Lubrication Instructions" could well be a boon that will simplify their problems, lower their costs and above all keep work equipment as busy as present programs demand.

STATION GROUNDS—

Who Will Do the Gardening Work?

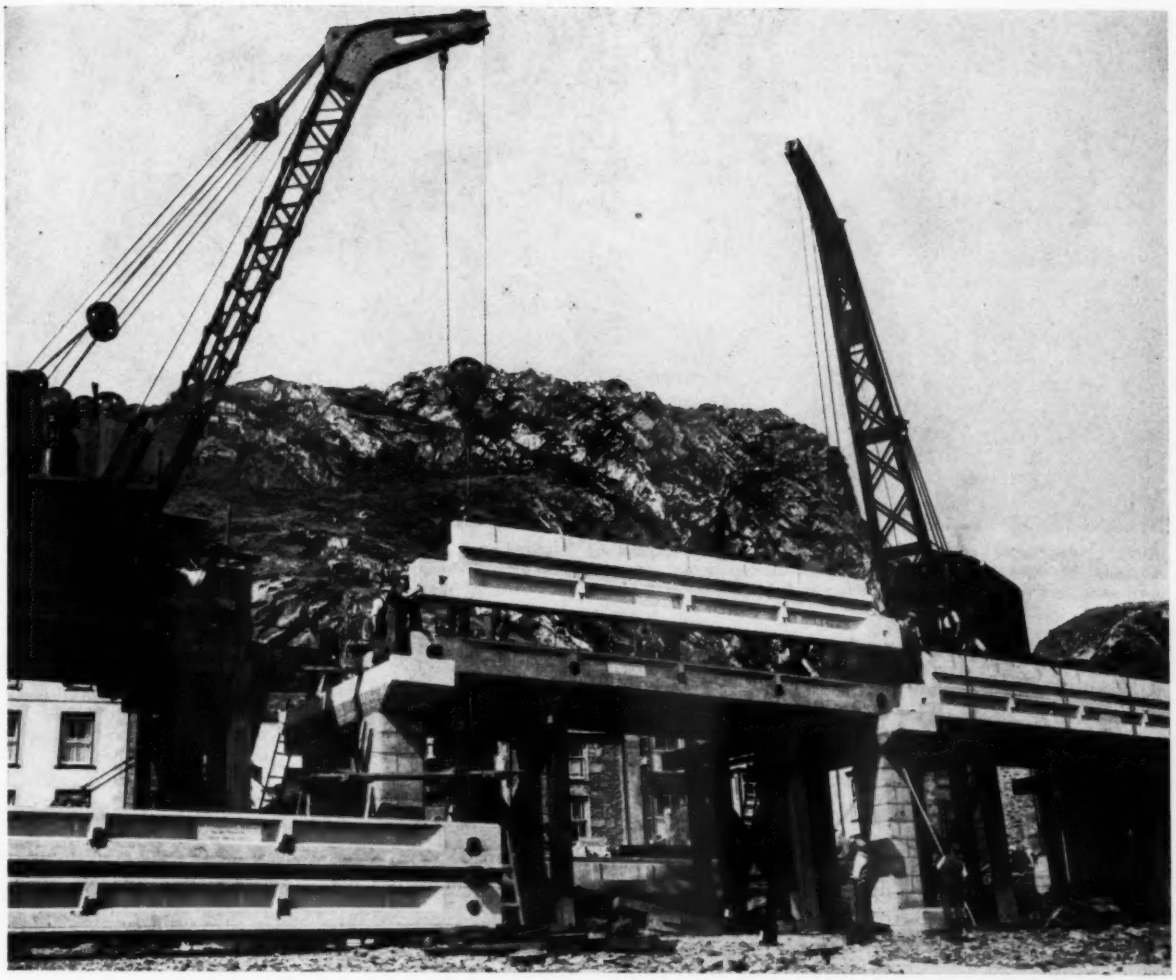
ALMOST all passenger station modernization projects are not considered complete unless some work has been done to improve the surrounding areas; otherwise much of the effect of beautifying the building will be nullified by its shabby surroundings. The outdoor improvements generally consist of some landscaping which includes plantings of shrubbery and perennial flower beds, and a lawn. But, unfortunately, such things need constant attention if they are to continue to enhance the appearance of the station, and the question arises as to who will give them the needed attention.

Almost at once the answer seems to be the sectionmen. But why? These men are employed primarily to keep the tracks in good condition and there are barely enough hours in a week to accomplish this. The truth is, these men are generally more experienced in the eradication of vegetation than in nuturing it, so it would seem that there is less chance of finding a man with a "green thumb" among them than among the station agent's forces.

But, when one railroad was modernizing its stations and incidentally improving the working environment of the station agents, the question arose as to whether or not the grounds should be landscaped, and, if so, who would keep the lawn mowed and the flower beds weeded. Each of the agents, whose station was under consideration, was asked if he or his clerks would undertake this chore—and all refused, stating that they had enough work to do without manicuring lawns.

Now that many of the old faithful section employees, who formerly did the mowing and policing of station grounds, are retired, and the 40-hour work week requires every able-bodied sectionman to be gainfully employed on the track, serious consideration should be given as to what shall be done with the station grounds. If it is decided that they should be kept mowed and the gardens weeded, then perhaps some local man can do the work and be paid out of the station accounts or advertising department's funds.

Otherwise, it seems that the trend toward covering the grounds with crushed stone will increase. Also, as pointed out in a recent committee report of the American Railway Bridge & Building Association, railroads will want to consider paving these areas, with the costs shared by the local cities, or to lease or even sell the properties to the cities for parking areas.



THE TWO OUTER BEAMS of each span had parapet walls carried up to 1 ft. above the top of rail, on which handrails were later mounted. The parapets were placed after the beams had been prestressed and were designed so as to assume no load.

British Railways Use

Prestressed Concrete Spans for Viaduct

Although hampered by an adjacent tunnel and by headroom restrictions, the British Railways satisfy local civic pride, as well as providing a structure requiring little future maintenance, by replacing an 86-year-old timber viaduct with one of concrete incorporating prestressed beams.

• Prestressed reinforced concrete construction has made relatively little headway on the railways in this country but in England it seems to have achieved a higher degree of acceptance, judging by its use in the recent replacement of a timber viaduct.

This structure is located on the British Railways' single-track line to Pwllheli over a small beach near the harbor just south of Barmouth, Eng. The old viaduct, originally built in 1867, consisted of 12 timber spans about 20 ft. long which were carried on timber piles. Although the structure had been strengthened and many of its parts replaced from time to time, the cost of further maintenance suggested complete reconstruction. At one end, the viaduct was separated by a short embankment from a tunnel, and at the other end it adjoined a 40-ft. girder bridge over a road. The viaduct crosses the beach within a few feet of a sea wall, behind which is a park, the main road, and a row of residential buildings—factors which influenced the choice of design for the new viaduct.

Local authorities wanted a struc-

UPON COMPLETION, the new structure presented an attractive appearance. Twelve prestressed concrete beams were used in each span and were supported at their ends by two-column piers constructed of 3-ft. square columns of reinforced concrete faced with pre-cast concrete blocks. The new structure replaces a 12-span timber viaduct built in 1867.

ture which would interfere as little as possible with the view across an estuary from the park, and which would not obstruct the view from the houses on the other side of the road. A superstructure of 40-ft. prestressed concrete spans was selected because these required the minimum construction depth and therefore met the local requirements. Moreover, concrete spans presented the best opportunity of making a bridge of the most pleasing appearance, which, at the same time, would require very little maintenance in the future.

The new spans rest on concrete piers founded on mass concrete foundations carried about 10 ft. down in the firm sand of the beach. Each pier consists of two 3-ft. square columns of reinforced concrete, faced with pre-cast concrete blocks. The columns are surmounted by a pre-cast reinforced concrete cap carrying concave steel bedplates for the spans. The surfaces of the columns were bush-hammered to present a more pleasing appearance as were those of the new abutment at the tunnel end of the structure.

The superstructure of each span consists of 12 pre-cast Freyssinet prestressed concrete beams. The 10 inner beams are alike but the two outer ones have parapets carried up to a height of 1 ft. above rail level to comply with Ministry of Transport requirements. Concrete posts with steel tubular handrails were erected and refuge points were provided over each pier.

Of I-section, the beams are 16 in. wide by 2 ft. 2 in. deep, made of 1:1½:3 concrete. Rubber Ductubes were used to form longitudinal ducts through which the Freyssinet cables were threaded and prestressed after the concrete had been cured for 28 days. Female cones and convex steel bearing plates were cast in the ends of the beams. Five transverse holes were also formed in each beam for tying the beams of a span together. The reinforced concrete parapets were cast on the outer beams after the latter had been prestressed, and were cast in short lengths with ¼-in. gaps between so as to avoid any chance of the parapets acting in the capacity of load-carrying structural members.

There are five Freyssinet cables in each beam; each cable consisting of twelve 0.2-in. diameter wires and each was stressed to a load of 23 tons. On completion of the prestressing, the ducts were filled with grout forced in under a pressure of 30 psi. and, after the surplus wire had been cut off, the end of the cables were encased in concrete. Mild steel bars, 1 in. in diameter, were bent to form loops and were cast near each end of each beam for lifting purposes. The concrete in the beams was of high quality and the cube strengths at 21 days after casting varied between 7,500 and 8,896.

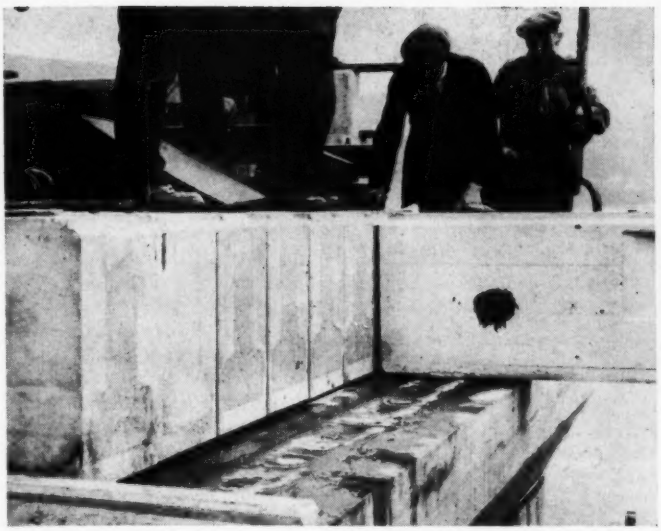
Subjected to Loading Tests

In addition to the cube tests, 25 per cent of the beams were subjected to loading tests at the railroad's testing plant. Supported on bearings, each of the test beams was loaded at two points near the center. The deflections were recorded and the surface on the underside was examined with a Brinel microscope for the detection of any cracks. The loads, applied by hydraulic jacks fitted with pressure gauges, produced stresses equivalent to (a) the full design load including impact allowance; and (b) the design load plus 50 per cent over and above the live load including impact allowance. The central deflections, measured with a dial gauge, did not exceed 0.42 in. under (a) and 0.63 in. under (b). No cracks were detected on the underside of any of the concrete beams.

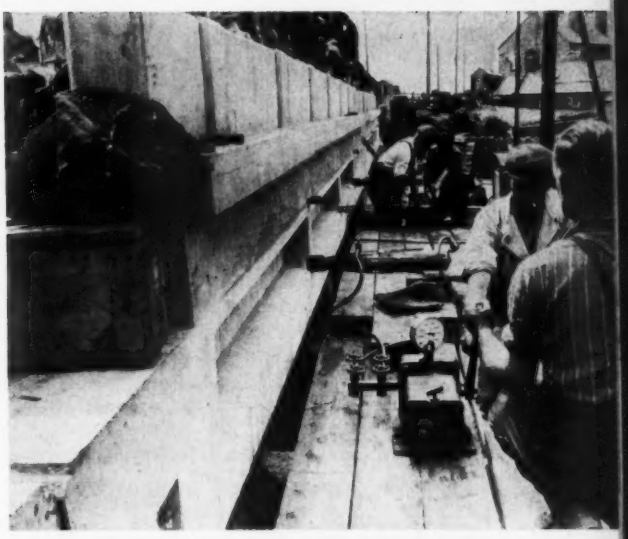
The bridge was designed to carry Bridge Stress Committee (1928) loadings A, B and C, with a maximum speed of three revolutions (approximately equal to Cooper's E-40 conventional engine loadings) and, after transverse post-tensioning, each beam was designed to carry an equal share of the load. Under this load, it was said that the compressive stress produced by prestressing will be nil on the undersides of the beams and the theoretical deflection at the center will be 0.50 in.

Erection Done on Week Ends

The new piers, located between the timber bents of the old viaduct, were completed up to the tops of the pillars. The superstructure was erected during two week-end oc-



THE 10 INNER BEAMS of each 12-beam span were identical. The end anchorages of the five Freyssinet stressing cables of each of the beams were encased in concrete after prestressing.



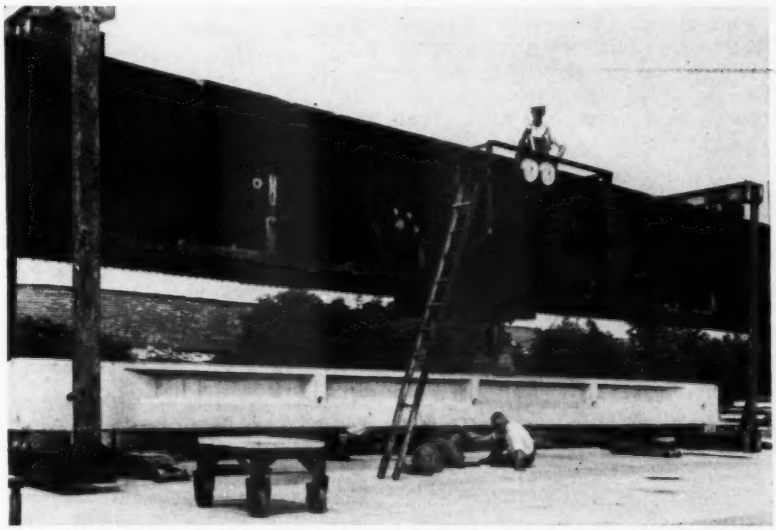
EACH OF THE FIVE CABLES used per span for lateral post-tensioning was stressed to a load of 27 tons so that each beam would carry an equal load.

cupations, each of 30 hr. duration. The work started from the tunnel end. The superstructure of the old timber viaduct was removed and three new spans erected during each week end.

Handling of Beams

Two 12-ton locomotive cranes were used to dismantle the old timber and to lift into position the new caps and beams, which had been previously unloaded alongside on the beach. The heaviest lift for a single crane was a cap weighing 10 tons. The beams weighed 6.5 tons for the inner ones and 13.5 tons for the outer ones, and these were placed by the two cranes. When erected, temporary mild steel bars were passed through the transverse holes of the beams and nuts were applied and tightened, thus drawing the 12 beams together until transverse post-tensioning cables could be applied.

When one span was erected, a temporary track was laid over it so the crane could advance to work on the next span. The crossties were laid directly on the six inner beams, which could carry this load. After the erection of the first three spans during the first week end, the intervening space between the third pier and the remaining part of the timber bridge was spanned with timber beams until the following week end. The speed of trains was restricted to not more than 5 mph until the spans had been fully post-tensioned transversely, the parapets and refuges completed, and the permanent ballasted track had been laid in place.



LOADING TESTS were conducted on one out of every four of the prestressed beams to see that they could withstand the design load plus 50 per cent over and above the live load, including impact allowance. Even though the undersides of the beams were examined with a Brinel microscope, no cracks were detected.

The five cables used for transverse post-tensioning were each stressed to a load of 27 tons. This work was carried out between trains during the days immediately following the week-end occupations. Because the sides of the beams could not be made with such accuracy that perfect contact could be assured throughout their lengths, small pieces of bituminous sheeting were inserted between them at the points where the lateral post-tensioning cables were to be passed through. This sheeting, together with a liberal coating of a compound around the holes, was used to seal the joints between the beams to prevent grout from running out when the post-tensioning cables were finally grouted in.

Recesses were provided on the top edges of the beams and, after completion of the post-tensioning, the joints were caulked with hemp run in with a hot-poured plastic compound. This waterproofing was then covered with ¾-in. thick precast concrete tiles as a protection. There was no other overall waterproofing. Provision for drainage was made with 1½-in. pipes cast in the side parapet walls.

Offers Suggestions for

Practical Uses of Research

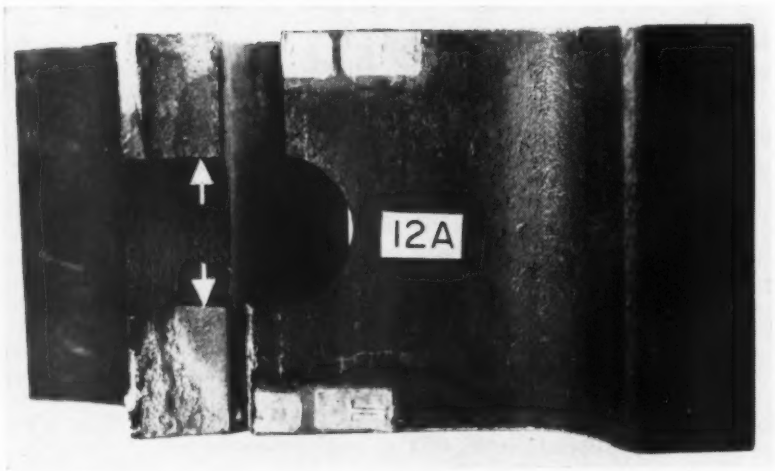
By G. M. Magee
Director of Engineering Research
Engineering Division
Association of American Railroads

A great deal of research work is being done in an effort to get improved performance from materials and devices used by the M/W forces. In this article, which is based on an address presented before a recent meeting of the Maintenance of Way Club of Chicago, Mr. Magee discusses some current research projects and makes suggestions for putting the results to practical use.

• In connection with the various research projects which the Engineering Division research staff of the Association of American Railroads has under way, there have been some interesting developments of direct interest to railway maintenance officers with respect to maintenance practices. My intention is to tell you about some of these developments with the thought that you may find the information of practical value.

Bolt-hole cracks and rail end fillet failures constitute one of our most important types of rail failures in control-cooled rail. Approximately one-third of the rail failures are in this category. Since the bolt-hole cracks orginate from the bolt hole the question naturally arises as to what effect the drilling may have upon the likelihood of cracks developing. In order to obtain information on this problem we have acquired a Sonntag fatigue-testing machine to make comparative tests to determine the effect of bolt-hole finish upon the likelihood of crack development. In this machine a 3-in. length of rail with the bolt hole at its center is placed and flexed so that a reverse tension and compression stress is produced in the rail web transverse to the length.

The procedure is to test specimens having good clean bolt holes and compare these with improperly drilled bolt holes containing gouges or burrs. Tests are made with different loadings and the number of cycles is determined before failure develops. These tests have not been completed but it is apparent from the work done so far that improperly drilled holes containing gouges or burrs appreciably lower the resistance of the steel to developing bolt-hole cracks. You are entitled to have properly drilled bolt holes free of gouges and burrs. Whether or not you receive properly drilled holes will depend upon the vigilance of your inspectors and their insistence that these be furnished.



LEFT—The surface of the rail around this bolt hole has been coated with a substance known as Stress Coat. The white lines indicate concentrations of stress due to bolt tension. BELOW—A rail section with bolt hole, which has been tested to failure in the Sonntag machine. White arrows indicate area where separation occurred in web due to fatigue failure.

What Impact from Joints?

In connection with tests being made to determine the impact effect on joint ties from rail joints and the extent to which these effects can be eliminated through the use of 78-ft. rail, an extensive series of tests was conducted on the Chicago & North Western last year. Tests were made with a good rail joint, with a bad rail joint and with a welded joint. A special test train was used consisting of a diesel locomotive, a fully loaded car, a half loaded car and an empty car. Although the test results have not been completely analyzed it is apparent that there is a very great difference in the joint tie impact effects between a welded joint and a good joint on one hand and a battered and worn joint on the other. With a good joint having little batter and tight-fitting bars and with the welded joint the additional impact effects due to the joint are only about 5 per cent or less. However, with the bad joint these effects varied from 50 to 60 per cent depending upon the amount of the joint gap. This emphasizes the importance of maintaining a good joint condition.

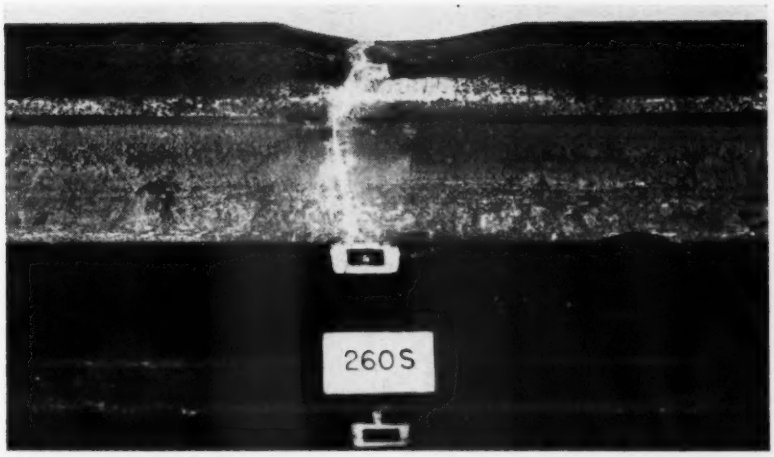
In connection with these tests it

Findings

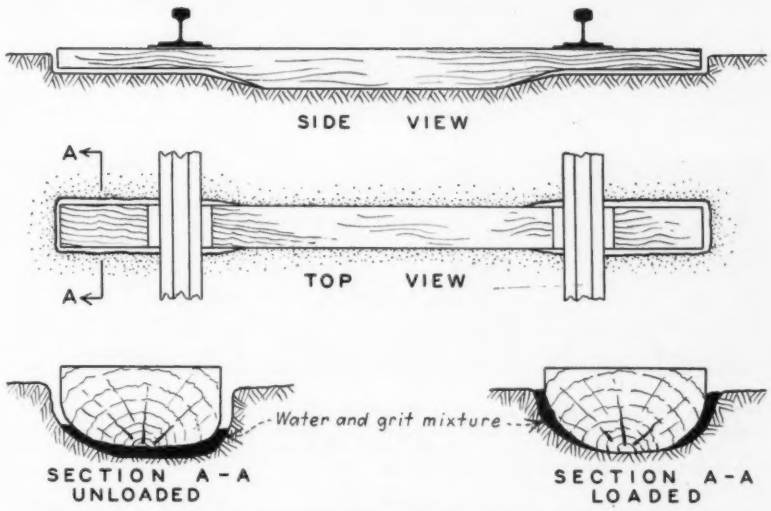
was also found that with the welded joints a perfect running surface was not always obtained. In some cases a depression of as much as .030 in. extending for a length of about six inches was found. It is important that to realize the full benefit of welded rail, care must be taken to assure that the grinding and finishing process gives a running surface as nearly perfect as it is practical to obtain.

What About Reformed Bars?

When reforming joint bars it is the general practice to Magnaflux the bars at the top center and grind out any shallow cracks. Where it is necessary to grind to a depth of as much as ¼ in. it has been customary to scrap the bars. To determine the extent to which this grinding could be carried 10 pairs of bars for 112-lb. rail, which had been ground to a depth of from 3/16 to 9/32 in., were reformed and sent to the University of Illinois for rolling-load tests. These 10 joints went an average of 852,600 cycles before failure occurred. This compared quite favorably with the number of cycles for failure for new joint bars, and it is therefore evident that bars need not be scrapped but may be safely reformed and used if the depth of grinding does not exceed ¼ in.



ROLLING-LOAD TESTS of reformed joint bars indicate that bars to be reformed may be safely ground to a depth of ¼ in. to remove cracks.



"ROCKING CHAIR" ties are illustrated in these drawings. The phenomenon has been noted in track where chatt ballast is used. The unusual pattern of wear occurs as a result of the abrasive action of the water and grit mixture.

"Rocking Chair" Ties

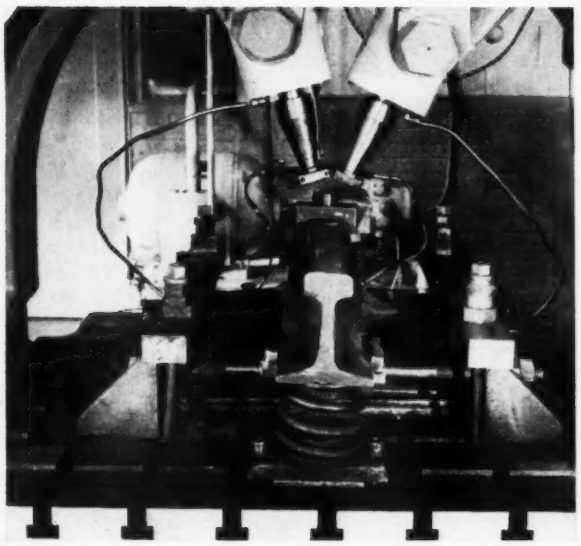
One of the railways in the Middle West has had difficulty with an unusual tie-wear condition described as "rocking chair" ties on a division in western Illinois. Treated hardwood ties would become worn on the bottom for a distance extending from about a foot inside of the rail to the end of the tie. The center portion of the tie would be practically full cross-section and unworn. This wear progressed very rapidly and in a period of 9 or 10 years the tie would be worn almost half through.

Examination of the ties in track indicated that the type of chatt ballast used became foul very quickly and formed a pocket around each tie and which retained water. The ties also became center bound as a result of this condition. It was apparent that the water which accumulated in this pocket at the tie end became mixed with fine sand, grit and dirt to form an abrasive liquid. When no wheel load was on the center-bound tie the ends would spring up and be free from the ballast bed, the liquid running in underneath to fill the void. When the load came on the tie the ends would be depressed on the ballast bed, squeezing the liquid out and up along the sides and end of the tie. This back and forth movement of the abrasive liquid occurred with each passing car and produced an abrasion or erosion of the bottom of the tie end and the loss in cross-sectional area.

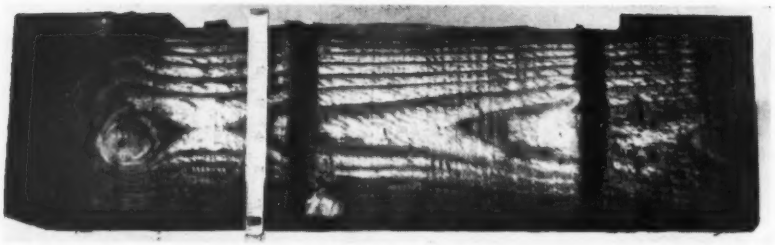
The remedy for this condition is of course either to change the type of ballast or to leave the tie ends open, filling them in at the sides from time to time with clean ballast. The first named correction is of course preferable. Another reason for mentioning this process of tie erosion is that the same principle occurs to some extent in the cutting of ties by tie plates which I will discuss further in connection with our tests of tie pads and hold-down fastenings.

Controlling Tie Wear

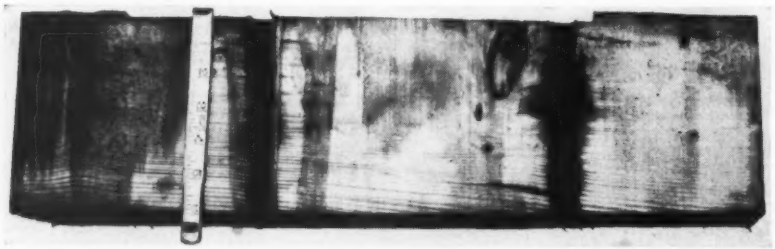
Due to the important part which tie renewals play in our track maintenance costs we have been devoting much research effort to evaluating means of controlling tie wear. Our work has shown that tie wear is due primarily to five factors.



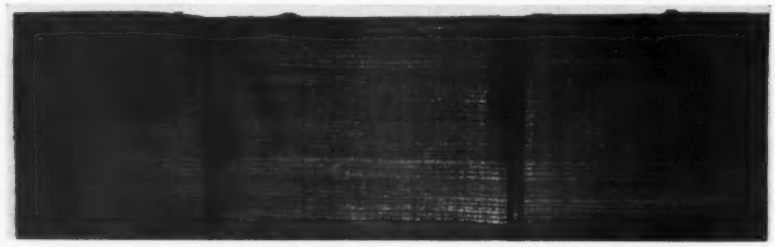
THESE ARE views of the repeated loading machine for measuring tie plate wear, which was developed at the Mahwah (N.J.) laboratory of the American Brake Shoe Company for its Ramapo Ajax Division. Loadings equal to 15 to 20 years of actual service can be applied in about two weeks.



THE THREE SPECIMENS shown here on sections cut from creosoted Douglas fir ties subjected to about 5,000,000 cycles of loading in the testing machine at Mahwah. In the specimen above the fastenings consisted of two standard cut spikes in the tie-plate line holes and two cut spikes in the anchor holes.



THE WEAR is about 50 per cent less in this specimen in which the fastenings consisted of two cut spikes in the line holes and, in the anchor holes, two hold-down fastenings of the type that restricts lateral motion of the tie plate.

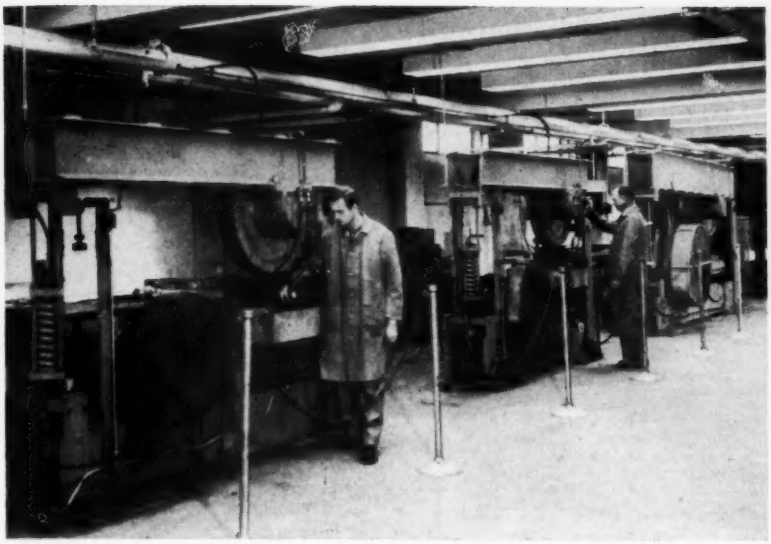


TIE PLATE WEAR was almost entirely eliminated in this specimen in which a tie pad was inserted between the tie plate and the tie. The fastenings were two cut spikes for line and two for anchors.

These are (1) intensity of the vertical pressure of the tie plate on the tie, (2) the lateral motion of the tie plate, (3) softening of the tie fibers due to water getting under the tie plate, (4) erosion of the tie fibers from the movement of the water under the tie plate with repeated loading, and (5) chemical deterioration of the wood fibers from corrosion products coming from the tie plate and the spikes. It is quite obvious that water is a very important factor in producing tie wear.

We have an extensive service test installation on the Louisville & Nashville near London, Ky., in which we are observing the service performance of various designs of hold-down fastenings and various makes of tie pads. The function of the hold-down fastening is to restrain the lateral motion of the tie plate on the tie. There are two different principles used to accomplish this. In one principle of design the tie plate is clamped firmly to the tie, depending upon the coefficient of friction and the vertical clamping force to restrain lateral motion. In the other principle of design the fastening wedges tightly in the spike hole and restrains lateral motion in this manner.

The function of the tie pad is to absorb within itself the lateral motion of the tie plate and, in addition, if the pad is of a material or is so coated that it will adhere to the tie, it will serve the further purpose of preventing water from



THESE TWO rolling-load machines in the AAR's Central Research Laboratory have been revised for making accelerated tests of tie pads and hold-down fastenings.

getting into contact with the tie under the tie plate. It would be expected that this waterproofing action would be very helpful in preventing tie wear.

Results of Accelerated Tests

The rate at which tie wear is progressing in the service tests at London is so small that a considerable number of years will be required to produce conclusive results. Accordingly, accelerated laboratory tests designed to simulate track conditions as well as possible and yet produce a considerable tie wear in a few weeks' time are helpful in evaluating the merits of tie plate fastenings and tie pads. The American Brake Shoe Company's laboratory at Mahwah, N.J., developed for the Ramapo Ajax Division an excellent repeated loading machine for this purpose. This machine applies repeated loadings of a 20,000-lb. vertical load with alternately a 5,000-lb. component inwardly of the track and 10,000 outwardly. This loading represents the maximum tie-plate loadings that would be expected in service.

In the course of about two weeks' time 5,000,000 cycles of loading can be applied in this machine which would be equivalent to the loadings in about 15 to 20 years of service on a moderately heavy traffic line. In addition to the repeated loadings, water and sand are continuously added in the tie-plate holes and around the edge of the tie plate. With 4 cut spikes an 8-in. by 14-in. tie plate will wear about ½ in. into a treated Douglas fir tie with 5,000,000 cycles of loading. A hold-down fastening which restricts lateral motion of the tie plate reduced this wear to about one-half. A tie pad which is capable of withstanding 5,000,000 cycles of loading and which seals itself to the tie reduced this wear to a negligible quantity.

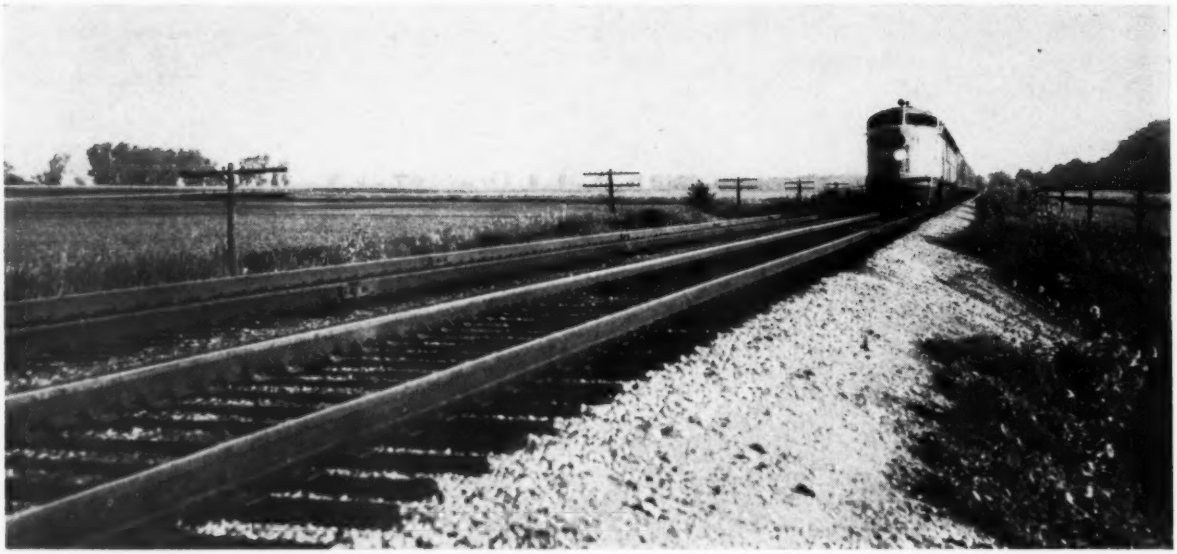
In our laboratory we have revised the design of two of our rolling-load machines so we can make accelerated tests. With these machines it is not possible to apply a horizontal force but a 30,000-lb. vertical load is applied and released for 5,000,000 cycles of loading. In our tests we obtained about ⅛-in. wear on a treated red oak tie with this loading. Tests have not been completed with tie-plate fastenings but tests made with tie pads that will withstand 5,000,000 cycles of loading and which seal to the tie have almost entirely eliminated tie wear.

Measurements of the amount of tie wear that has developed in the service tests to date have also indicated that a suitable tie-plate fastening will reduce the tie wear approximately 50 per cent and that a suitable tie pad will almost entirely eliminate it. Therefore, although our research work has not been completed to the point where definite evaluations and specification can be made, this information on the relative effectiveness of tie-plate fastenings and tie pads in controlling wear may be of service to you in deciding which, if any, of these measures you will want to adopt. In my opinion both have their fields of usefulness. Tie pads will probably cost more than hold-down fastenings but this additional cost may be justified at various locations such as on bridges, on sharp curves, at joints, etc. The tie-plate fastenings may be justified on light curves and tangent track where tie wear is less severe but is still a factor in shortening tie life.

Manganese Crossing Frogs

We have been conducting tests on manganese crossing frogs for several years in an endeavor to find means of preventing flangeway cracks. The Santa Fe-Baltimore & Ohio Chicago Terminal crossing near McCook, Ill., has been used as sort of proving ground for this work. Stress measurements have been made on various designs of castings under traffic and then the castings have been left in service to determine their total service life. Considerable improvements have been made by the manufacturers in their crossing designs as these tests have progressed. Without going into the details of the various improvements made, which constitute a rather long story, it will perhaps suffice to advise you that such improvements have been made and that if you are having difficulty at any location with flangeway cracks it would be advantageous for you to check to determine whether the crossing designs you are using are in accordance with the newer designs which have shown the best all-around performance at this proving ground.

High-strength bolts in lieu of rivets for structural work is a recent development that offers promising economies. These bolts may be used to replace loose rivets in existing structures, thus eliminating the cost of bringing a forge, air compressor, etc., out to the job. They are being used extensively now in new construction principally because of the scarcity of skilled riveters. Laboratory tests have shown that bolts are superior to rivets for members under repeated loading because the clamping force on the washers around the bolt hole largely eliminates the stress concentration effect of the hole. Extensive field tests have shown they are superior to rivets in staying tight under vibrating conditions. They should be used with hardened steel washers and tightened nearly to their elastic limit to be most effective.



WELDED RAIL, although more costly to install, produces savings in maintenance and longer service life. Almost 85 per cent of the welded rail laid in open track is on tangent.

What Savings from Butt-Welded Rail?

This article is based on a report of a subcommittee* of the Special Committee on Continuous Welded Rail of the American Railway Engineering Association, which was presented at the recent annual meeting at Chicago. Based on data received in reply to a questionnaire submitted to 10 railroads which had installed in excess of two miles of welded track, exclusive of tunnels, it covers first cost, maintenance cost, life and salvage value of both types of rail.

• For the purposes of this report the economics of welded track have been studied from the standpoint of three weight groups; (1) 131-lb. rail or heavier; (2) 112-lb. and 115-lb. rail; and (3) 90-lb. rail (the only installation reported of rail less than 112 lb. was one of 90 lb.).

The 10 railroads from which the data for the report were obtained furnished information of record as far as it was obtainable, but much of it, such as increased life of welded rail, maintenance cost, etc., was necessarily estimated by the reporting railroads due to the fact that very little of the welded rail has been worn out in service, and much of the rail in the heavier weights with which it is compared is also still in service. However, the data are based on the judgement of the chief engineers of the reporting railroads and, it is felt, when averaged, are as accurate as possible at this stage of development. The information is submitted in this form as it is felt that it will be many years before any better data are obtainable and that this information will be of value to the railroads of the country in determining their policy relative to the use of welded rail.

The data pertaining to 131-lb. rail or heavier, as submitted by six railroads, indicate that the average additional cost to install welded track is $3,872 per mile. These reports also show that an annual maintenance saving of $513 per mile is obtained on welded track. Capitalized at 5 per cent, this maintenance saving will offset the additional cost of welded rail in seven years. Since the reports show that the average life of welded rail is 26 years, the saving in maintenance cost would be made 19 years in each 26-year period, or an average annual saving of $375 per mile.

Has Longer Life

In addition to the saving in maintenance cost, the reports show that rail in welded track has an extended life of 7 years, which gives 26 years for welded track, compared with 19 years for jointed track. The difference in value of new rail (at $86 per gross ton) and relayer rail (at $33 per gross ton) is approximately $11,000 per track-mile. The annual investment needed to accumulate $11,000 in 19 years (using an interest rate of 5 per cent) is $360, while the annual investment to accumulate the same sum in 26 years is $215, or an annual saving of $145 per mile.

The out-of-face surfacing cycle, according to the reports, is extended an average of at least 15 per cent where there is welded track. Out-of-face surfacing, including the renewal of 500 ties per mile and a 3-in. ballast lift, is estimated to cost $7,000 per mile. Using an average cycle of six years between out-of-face surfacing programs, a 15 per cent extension of cycles will result in an annual saving of $175 per mile.

The cost to relay welded track in secondary or yard tracks has not as yet been very well developed. Few roads have had welded rail installations in service a sufficient period of time to require relaying. However,

* I. H. Schram, chief engineer, Erie, Cleveland, Ohio, was the chairman of the subcommittee which prepared the report.

Table I—Economics of 131-Lb. Welded Rail

Net annual maintenance saving	$375
Annual saving account of longer life of rail	145
Annual saving account of extended out-of-face surfacing cycle	175
Total	$695
Annual additional cost to relay welded track	24
Net annual saving per mile	$671

Table II—Economics of 112-Lb. and 115-Lb. Welded Rail

Net annual maintenance saving	$354
Annual saving account of longer life of rail	125
Annual saving account of extended out-of-face surfacing cycle	175
Total	$654
Annual additional cost to relay welded track	24
Net annual saving per mile	$630

from the few roads reporting, it appears that it will probably cost approximately $1,200 more per mile to relay welded track than jointed track. Using 26 years as the average life of welded rail, the annual sum required to capitalize $1,200 in 26 years is $24. These comparative costs are summarized in Table I. The average annual tonnage carried on tracks used for this summary is 18,359,000 tons.

Lighter Rail Compared

The data pertaining to 112-lb. and 115-lb. welded rail were furnished by three railroads having in excess of two miles of welded track, exclusive of tunnels. On the same basis as that used for the 131-lb. and heavier rail, the data submitted for 112-lb. and 115-lb. rail are summarized in Table II. The average annual tonnage carried on tracks used for this summary is 11,700,000 tons.

The one road reporting 90-lb. welded rail does not include the annual maintenance costs of welded track. Without this figure it is not possible to compute the annual savings.

Used More on Tangents

While the analysis of the reports shows a definite economy in the use of welded track, about 85 per cent of the track installed has been on tangent track. The only road with a large percentage of curvature (the Delaware & Hudson, with about 32 per cent on curves) shows a very short life for either type of track, although it does indicate much longer life for welded track than for jointed track. Since welded track should be worked only when the temperature is at or near the installation temperature, it would be a problem to obtain efficiency from the maintenance forces if any division is predominantly of welded construction.

It is apparent that a substantial saving will be made by the use of welded rail at locations where the mechanical wear of rail is not excessive from curvature or grade. The difference between the initial cost of welded and jointed track will be reduced with wider use, as more efficient methods of handling are developed. This fact is apparent from the reports that show the least differences in initial cost on those roads that have installed the greatest mileages of welded track with modern welding methods.

The cost of welded track is influenced by a wide variety of conditions that are variable for each railroad. A location for the welding station must be selected that will best balance all the requirements, including length of haul of welded strings, available space for the station

WELDING PLANT SET-UP should be carefully considered as to space, availability of power, and a location that will not incur too long a haul of the welded rail.

THE COST of laying welded rail will be reduced with wider use, as more efficient methods of handling are developed.

set-up, availability of power, the possibility of a source of oxygen supply to utilize an oxygen cascade system, and sufficient stockpiling space.

No Standard Length

The lengths of welded strings vary on the reporting roads from about 800 to 1,600 ft. Considerations affecting these lengths include the effect upon traffic during unloading and laying operations, transportation facilities available and equipment for handling this rail, capacity of cranes handling strings of rail, and the number of welds made in an 8-hr. day (usually about 40). The length of strings determines the number of field welds that must be made, and it is best to keep these at a minimum as they are both expensive and not as satisfactory as pressure welds.

RIGHT—Typical view of the ballast condition inside the Chilcoot tunnel before the work of lowering the track began. BELOW—Seepage within the tunnel had saturated the ballast and created difficult working conditions. Note the water splashes made by the digger arms of one of the two Power Track Cribbers employed on the job.

Cribbers Help WP to Lower the Track In a Tunnel

Through the use of two cribbing machines, a clamshell and motor-car and push-car trains, the Western Pacific lowered the track in its Chilcoot tunnel to increase the overhead clearance and to improve track conditions.

● An example of how existing machines can be adapted in solving unusual and difficult problems is afforded by a project recently carried out on the Western Pacific for lowering the track in its Chilcoot tunnel. This tunnel is located on the road's main line near the California-Nevada state border, about 20 miles east of Portola, Cal. It is 6,001 ft. long and consists of 72 ft. of concrete portals, 4,281 ft. of timber-lined tunnel and 1,648 ft. of unlined rock walls.

There was considerable water seepage in the tunnel and over the years the track had been raised several times on fresh ballast. Eventually, the additional ballast also became thoroughly saturated and extremely foul, interfering with drainage. Moreover, as a result of the successive track raises the desirable overhead clearance had been reduced. To remedy these conditions, the road decided to lower the track where possible, without encountering the rock subgrade, to provide additional overhead clearance and to replace the fouled ballast, consisting principally of limestone, clay and silt, with crushed stone ballast, ½ in. to 1½ in. in size, applied to a depth of 8 in. under the ties.

Procedure of Work

Briefly, the procedure decided upon for carrying out this project consisted of using cribbing machines to kick the ballast from the cribs toward the ends of the ties, after which the ties were moved into the open cribs. This cycle of cribbing and respacing the ties was repeated until the track had been lowered the desired amount. The material cleaned from the cribs was loaded into push cars by a track crane with a clamshell bucket, and the trains of cars were towed by motor cars to a disposal point.

The equipment furnished for this work consisted of two Pullman-Standard Power Track Cribbers, a Burro crane equipped with a ¼-yd. clamshell bucket, two motor cars, eight push cars having dump bodies, five Jackson power plants, and one Caterpillar D6 tractor-bulldozer. The generating plants were used for lighting purposes and were

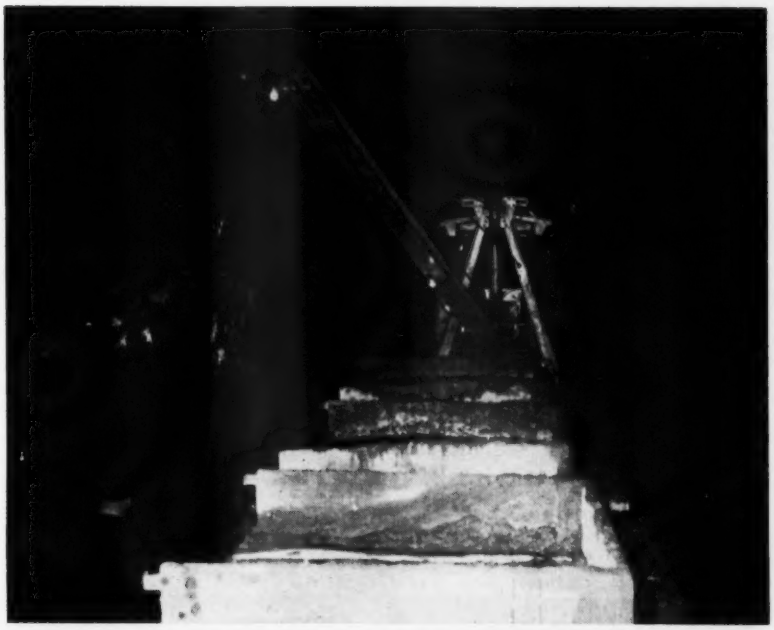
assigned as follows: Two for general lighting in the tunnel, with one unit placed on each side for supplying current to 10 lights distributed along 100 ft. of wire; one for lights on the crane; and one each for the lights on the cribbing machines. The bulldozer was used outside the tunnel for spreading the waste material dumped from the push cars.

The work of digging the track down began on the east approach about 780 ft. from the tunnel portal. For the first 260 ft. of track west of this point, one pass of the cribbing machine was made. On the next 260 ft. of track, two passes were made to lower the track from 4 in. to 8 in. On the 260 ft. of track nearest to the portal, three to four passes of the cribbers were made to further lower the track from 8 in. to 12 in. The track was then reballasted with clean crushed stone, and tamped. The west approach was treated in the same manner.

Organization in Tunnel

A gang of about 50 men was employed for the work in the tunnel. These consisted of a foreman, an assistant foreman, 2 cribber operators, a crane operator, a mechanic, and 42 laborers. The cribbers formed the first unit of the gang. Their progress on the first few passes was slowed down somewhat because of the soupy ballast conditions prevaling in the tunnel. However, when the drainage outlets were cleaned out, better progress was made.

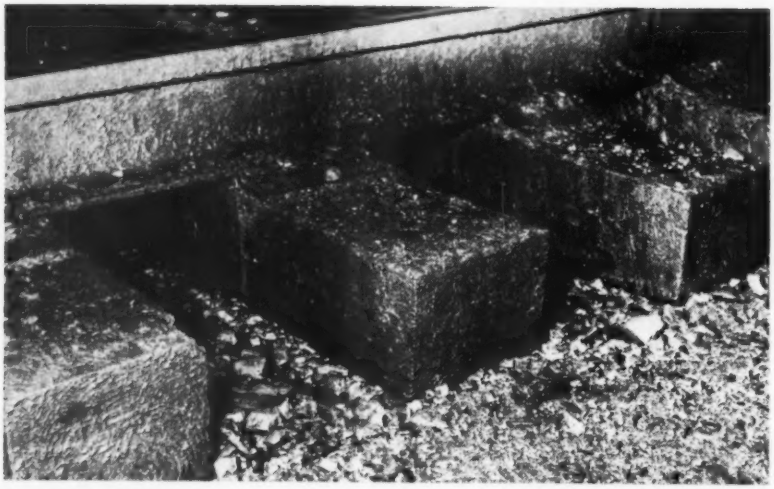
Behind these machines came a unit of 12 laborers who readjusted the rail anchors preparatory to moving the crossties, and moved the ties over into the cribs. A following unit, consisting of 10 laborers working 5 on each side of the track, moved the material away



TWO TRAINS of four push cars each, equipped with dump bodies, were used to haul the excavated material from the tunnel. A Burro crane with a ¼-yd. clamshell bucket loaded the old ballast onto the three push cars it could reach.

RUBBER BOOTS were a "must" on this job (above). Three men loaded the fourth push car, which was nearest the motor car, then went along with the train to dump the cars at the disposal site.

THE UNLOADING (left) of one train of push cars was carried out while the other, in the tunnel, was being loaded. A Caterpillar D6 tractor was used for pushing the spoil from the track.



WORKING CONDITIONS were much better after the first pass of the cribbing machines and the side ditch cleaning operation which resulted in greatly improved drainage conditions within the tunnel.

SHIFTING THE TIES into the excavated cribs. By this means the track was lowered and more ballast was exposed to be excavated by the cribbers. Strings of lights, powered by Jackson power plants, were strung along the tunnel sides.

LUNCH OVER, the equipment moves back into the tunnel. These units included two Pullman-Standard Power Track Cribbers (one is out of view at right), a Burro crane, and two push-car trains of four cars each.

from the ends of the ties for easier loading by the clamshell. In the unlined portion of the tunnel, the distance on each side from the ends of the ties to the wall was 6 ft. but in the timber-lined portion it was only 4 ft.

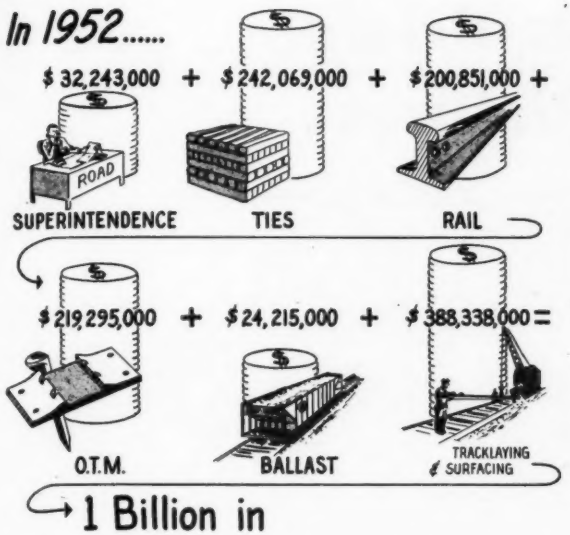
Loading the Push Cars

Next came the loading unit to which the Burro crane, the two motor cars and the push cars were assigned. By keeping the boom relatively low, the crane, assisted by a laborer on the ground with a guide rope, could place the bucket where it was needed. The push cars were coupled into two trains of four cars each, and each train was towed by a motor car. As soon as one train of push cars was loaded it was moved to the place of disposal, while the other train moved into loading position. The car nearest the motor car was loaded by three laborers assigned to each train while the crane loaded the other three cars. The laborers of each train accompanied it to the disposal point to help with the unloading work.

The last unit of the gang, consisting of 8 laborers, replaced the ties, rough lined and spot-tamped the track to keep it in good cross level for train operation. After the first pass of the cribbing machines, it was found that traffic had a tendency to disturb the ties in the open cribs. For this reason an advance unit of 4 laborers was put to work ahead of the cribbing machines for straightening the ties.

This general work procedure was revised as necessary to accommodate situations that might require more or fewer men for certain operations. For instance, a man or two would be assigned temporarily to the disposal site for assisting in handling the spoil material. Also, men would be taken from their normal duties to help in dumping fresh ballast and for raising and lining the track that had been lowered to the desired depth.

The work was started during the Fall of 1952 and was progressed through the winter, for completion in the early part of this year. To do this same work without the use of the mechanical equipment, the road estimated that the job would have required half again as many men and one-third more time. This project was carried out under the direction of C. E. Forseth, division engineer, Elko, Nev., and W. C. Zent, roadmaster, Portola, Calif., while O. F. Peteet was the foreman in charge.



Deferred Maintenance

• An accumulation of $984,611,000 in deferred maintenance on the Class I railroads between 1915 and 1952 is revealed in the 1952 edition of the "Railroad Maintenance Report" as issued by the Engineering Section of the Interstate Commerce Commission's Bureau of Valuation. Estimates of deferred maintenance in all operating accounts were made but the "track accounts" completely dominated the scene and, as a result, the bureau elected to ignore the small amounts of deferred and surplus maintenance found in the other accounts and expanded only those shown in the above graphical presentation. All estimates were adjusted to account for excess cost of overtime, to a common dollar of equal purchasing power, and to reflect the effect on maintenance of changes in traffic density. Let us examine these accounts more closely:

Account 201: Superintendence, Road—Affected approximately 50 per cent by changes in traffic volume, this account registered only a slight amount of deferred maintenance as compared with the over-all total.

Account 212: Ties—As might be expected, the tie account ran second only to track laying and surfacing in deferred maintenance expenses. To arrive at the $242 million figure shown above, the bureau applied a percentage rate of replacements to the number of ties in track. The resulting figures were then adjusted for traffic changes. The major portion of the deficiency found in this account occurred between 1949 and 1952 and represents about 2½ years normal installation of creosoted ties. The bureau, however, sees no cause for alarm and calmly states "the deficiency is around 9 per cent but this does not mean that the operating efficiency of the track is seriously impaired."

Account 214: Rail—Working from the basis that the average life of new rail is 20 years, the bureau found the nation's railroads about 3 years behind in rail renewals. While pointing out that "there are mitigating circumstances in that new rail is applied principally to heavy-traffic main lines where most needed, and improvements in maintenance, such as building up rail ends and joint bars, have a tendency to postpone the necessity for replacement . . .," the bureau notes "that operating efficiency, if not impaired, is at least reaching the point where such efficiency is threatened."

Account 216: Other Track Material—The deferred maintenance for this account was computed on the amount of deferred new rail tonnage in Account 214. In addition, the estimate reflects the fact that about 13 per cent of relay rail tonnage requires the installation of new fastenings and accessories.

Account 218: Ballast—This account also had its deferred maintenance computed on the basis of deferred new rail tonnage. In accordance with general practice, the bureau computed a 3-in. raise under the mileage of rail that would be laid if the deferred maintenance of new rail was made good.

Account 220: Tracklaying and Surfacing—It was found that about 60 per cent of the total expenses charged to this account was for routine track lining and surfacing to which there could be charged no deferred maintenance. The remaining 40 per cent was for replacement maintenance, i.e., the cost of labor for applying replacements of retired material such as ties, rail, fastenings and ballast. The cost of applying the latter items to achieve normal conditions in the other accounts contributed to the high deferred maintenance of this account.

The railroads presented the bureau with data, before preparation of the 1952 report began, showing inefficiency of labor during war and postwar years amounting to a maximum of 40 per cent for all accounts. These data, however, were rejected by the bureau as being unacceptable. Subsequent studies, carried out by the bureau showed that average labor inefficiencies ranged only from 7 to 15 per cent. In consequence, the bureau stated "since the deferred maintenance is to be made good at some time in the future . . . we would not be justified in making any adjustment in our estimate for this factor."

The total of the figures presented in the above graph amounts to $1,107,011,000. To arrive at their estimate of $984,611,000 in deferred maintenance, the bureau subtracted from the former figure the amount of $122,400,000 in surplus maintenance. This surplus was found in accounts 301 and 311, Superintendence, Equipment, and Other Locomotives, respectively. Of this estimated surplus maintenance, $120 million was charged in account 311 since, the bureau noted, the average age of diesel locomotives (4 years) is much less than one-half their estimated service life and the normal cost of repairs will not be experienced for several years.

What IS Deferred Maintenance?

Deferred mantenance is an estimate of how much should and probably will be spent by the railroads for labor and materials to make repairs and replacements on property on which needed work has not been done. The amount of money required, in each case, is that needed to bring the status of the property to a normal or so-called "50 per cent" condition.

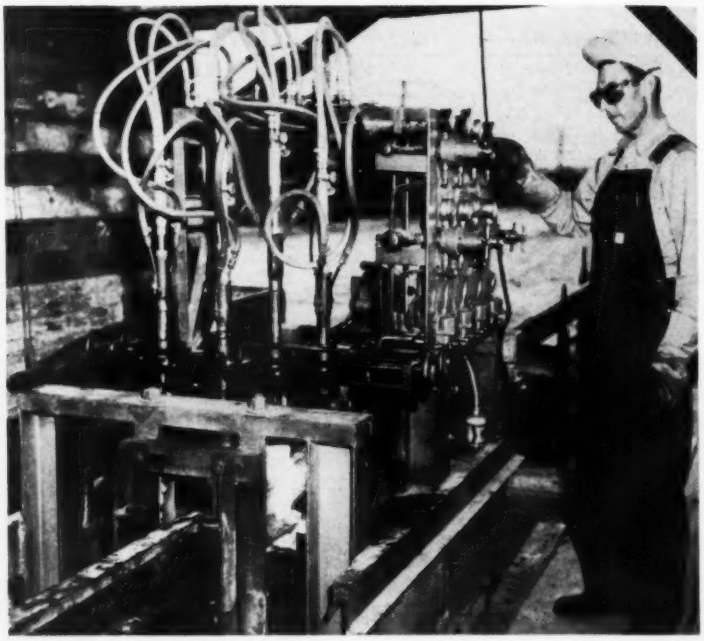
When half the estimated service life of a repair or property has expired, it is said to be at a 50 per cent condition. If less than half of the service life has expired, surplus maintenance exists. When more than half of the service life has expired, a deficiency exists. The amount of deferred maintenance is the excess of such accumulated deficiencies over the surplus.

News Briefs in Pictures . . .

TIPPLE end of new $551,000 Missouri Pacific rail-to-barge coal transfer on the Mississippi river at Ford, Ill. Cars in tipple dump coal into 220-ton capacity track hopper and . . .

. . . **CONVEYOR** system carries coal from hopper, under adjacent tracks, and into headhouse which can be seen in background. Here the coal is transferred to the . . .

. . . **LOADING DEVICE** which places it in the waiting barge. Loader, suspended between two concrete-filled piers, can be raised and lowered to accommodate varying river levels.



PRODUCTION RECORDS for turning out oxy-acetylene pressure butt welds in rail are being topped by the Texas & Pacific at Scottsville, Tex. Using equipment of the Oxweld Railroad Service Company, shown above, the road is carrying out a program for producing 72-ft. rails from standard lengths of 112-lb. rail. Since the start of the program production has averaged 62 welds per day and on one day reached a peak of 72 welds in eight hours.

TO ELIMINATE excessive curvature and reduce possibility of flooding on its line between St. Louis, Mo. and Little Rock, Ark., the Missouri Pacific is carrying out a ¾-mile long line and grade revision near Glen Park, Mo. The job, entailing a 120-ft. cut and a 60-ft. fill along the bank of the Mississippi river, is being done by the Porter-DeWitt Construction Company. A Lorain model L-820 J shovel is shown here digging limestone from 30-ft. face.

WHAT'S THE ANSWER?...

. . . a forum on track, bridge, building and water service problems

How to Keep Work-Train Expenses Low

What are some of the best ways to reduce the need and the cost of work-train service? Explain.

Put Instructions in Writing

By A. P. Crosley

Assistant Engineer Maintenance of Way, Reading, Philadelphia, Pa.

There is a great deal of doubt that we shall get away from work-train service for the distribution of the heavier items, such as rail, ties and ballast, used in track-renewal work. Experiments have been made in the distribution of rail by means of a Burro crane. By using two heavy-duty push trucks, it is possible to move about 33 full-length 130-lb. rails. This works well in yards where the runs are relatively short, but for use on the main line where sidings are rather far apart, considerable lost time results from the necessity of running back and forth to the cars or source of supply. The same disadvantage holds true for handling ties. Generally speaking, there is little to justify work-train service in yards since a crane is more flexible in that it does not take up the room of a train and can get in where a train cannot. This results in more cooperation being secured from the operating department.

One day it may be possible to build a roadway immediately adjacent to the tracks. If that time comes, it will be more economical to use trucks for the distribution of ties, assuming, of course, that arrangements could be made to handle them from cars to truck in bundles and not individually. It is conceivable that on single or double-track lines, that ballast might be handled in a similar manner direct from the quarry, provided a source of supply is relatively close.

The above contemplates considerable work being done in advance, and although many roads are widening cuts and fills so roadways might be provided, it is not possible to figure on them for some time. Recognizing this, it is most important that all concerned give their utmost attention to the details of work-train operation to reduce the costs. The planning must start with the supervisor. He should have a clear picture of what is to be accomplished, what constitutes a day's work and the general operating conditions of the territory to which the train is assigned. It is most important that detail instructions be given the foreman and work-train conductor. These should be in writing and a copy retained so the report of work performed may be checked against the program. The supervisor should know the character of the work, whether it can be handled by the assigned work-train gang or whether it is necessary to augment this force. If so, the arrangements should be so set-up that the men are at a designated point so there will be no appreciable delay to the work train.

The supervisor or general foreman should spend as much time as possible with the work train. He should be very careful in checking the reports as to work accomplished and take corrective action where delays are excessive.

Show Operating People Plans

By George S. Crites

Division Engineer (Retired), Baltimore & Ohio, Baltimore, Md.

Work trains produce no revenue and are a general nuisance to other train operations hence their use should be kept to an absolute necessary minimum for handling work which can not be done by any other means. Such work includes distributing and picking up rail, or handling ballast for out-of-face work or heavy materials for emergencies where no other service will do.

Owing to the many rules and agreements covering train operations, it is best to have all the work planned for work-trains gone over

---

Answers to the following questions are solicited from readers. They should be addressed to the Whats' the Answer editor, Railway Track and Structures, 79 W. Monroe St., Chicago 3, and reach him at least five (5) weeks in advance of the publication date (the first of the month) of the issue in which they are to appear. An honorarium will be given for each published answer on the basis of its substance and length. Answers will appear with or without the name and title of the author, as may be requested. The editor will also welcome any questions which you may wish to have discussed.

To Be Answered In the August Issue

1. When loading rails on flat cars for shipment in "revenue" trains, what precautions must be observed to assure safety in transit? How can such rails be tied down effectively? Explain.

2. What, if anything, can be done in advance of anticipated floods to minimize the damage to railway buildings? What building repairs, other than ordinary clean-up work, are usually required after floods? How and when can they be made with the best results? Explain.

3. Under what circumstances is it advantageous to transport motor cars on highways? To what extent can small two-wheel trailers be used for this purpose? With what accessories should the trailers be equipped? Explain.

4. In placing corrugated pipe culverts in new or old fills, what methods produce the best results? What specific precautions are necessary in each case? Explain in detail.

5. How can switch points be welded effectively in track? What determines the success of this method of reconditioning points? Explain. Can welding be performed at main-track switches as well as in yards? Explain.

6. To what extent do the physical characteristics of engine sand affect the time required to dry it satisfactorily? Should those characteristics be known before deciding on the size and type of dryer to be installed in a new facility?

by a responsible operating official and with him schedule all details as to power, crews, tieups, seniority districts, etc. When the schedule so worked out is placed in effect, all departments must be impressed with the necessity of strict adherence to it.

If the work to be done is not of an emergency nature, it is found that assigned power and assigned crews are the smoother running and most productive. In emergency cases, or where regular crews cannot be assigned, an assistant trainmaster, or an assistant road foreman, or both, can be assigned to the work train to coordinate all details of handling the work with the M/W officer in charge.

In the past, many disputes with the train, engine, yard and other forces which have reached arbitration boards arose from the operations of work trains without complete understandings between all persons involved. Such misunderstandings are costly in money and in goodwill and can be avoided by proper planning. There will always be a need for some work-train service everywhere. The fact that such service is not as common as it used to be makes it more necessary than before to be sure that it is most carefully planned and scheduled.

Plan Work with Ingenuity

By J. W. Diffenderfer

Track Supervisor, Pennsylvania, Johnstown, Pa.

Work trains, when too abundantly placed at the disposal of M/W men become like "Topsy," they "just grow." At such times, there is little evidence of the planning, programming, execution, and engineering though put into the operation of work trains that is seen in so much other M/W work.

To reduce, first, the need of work-train service it is necessary: (1) To utilize off-track equipment as much as possible, feasible, and economical; (2) to use locomotive cranes in terminal territories and on main lines where work is to be concentrated in a short distance; (3) to use fast, self-propelled rail cranes for all work that does not involve the handling of cars or great quantities of material; and (4) to plan work-train trips in such a manner that there will not be duplications in direction or in similar work day after day that could be avoided.

In handling jobs involving small quantities of material, work trains can become quite expensive. Many small jobs, such as delivering and changing broken rails, frogs, and switch material, furnishing outlaying sections with supplies and small material, and delivering or moving various types of machinery, can be done more economically by one of the alternatives mentioned above.

Where highways parallel or meander close to the railroad, or where a good roadway has been provided on the railroad right of way, off-track equipment, such as highway trucks, truck cranes and highway trailers, can handle many of the small jobs that would become very expensive if an attempt were made to do them with a work train.

With locomotives and crane-carrying cars involved, work trains become cumbersome in yard and terminal territories. This points to the need for short units that can be shunted about quickly and require the minimum amount of space. A locomotive crane with one or two cars and "short" or no train crews can often do more work than a larger work-train unit in a busy yard or terminal.

We have found that the self-propelled rail crane is one of the most versatile, and, for that reason, one of the most valuable pieces of work equipment for M/W work. When operated as a track motor car in yard or main-track territory, its costs become but a fraction of those of the locomotive crane and work-train units requiring costly motive power, M/W forces, and train crews.

Using large push trucks and such a crane, we have been able to handle between 20 and 30 tons of material for distances involving round trips of 70 miles within a working day, and accomplish much work enroute. These units can economically deliver material, install it, and clean up the replaced material with a minimum of time, effort, and cost. Here, they are used to supplant or augment regular work-train and locomotive-crane service, and enable us to keep the right of way clean of M/W material, drawheads, scrap, and spilled lading. We have found them able to maneuver so well that they can deliver materials to wrecks and other emergencies where work trains, for operating reasons alone, might not be permitted access for hours after the materials were actually needed.

Aside from good equipment, the most important requisite is good planning. Any organization may have all equipment possible at its disposal and still have a poor performance. Both the cost and need for work-train service may be reduced by proper planning of the work. Detailed knowledge of the physical and operating characteristics of a territory are essential. An up-to-the-minute knowledge of track conditions and the work to be done is required. This demands continual inspection of the territory. Proper planning requires this knowledge plus a skill in organizing work.

It cannot help but follow that, secondly, to reduce the cost of work-train services, when used, planning is necessary. The work-train must be assembled in such a manner that the minimum of shifting is required during the course of the day's work. Cars of material to be worked first should be nearest the crane or other equipment with which it is to be handled. Operations, such as rail loading or unloading, which require constant moving and thus the vigilance of the engine crew, should be placed as close to the engine as possible. The direction in which the engine faces is important. Although the use of diesel locomotives in work-train service has minimized that factor in comparison with the days of steam power, it is often important to have the engineman located on the side on which the majority of the work is to be done.

To save time, delay, and misunderstanding, it is best to type detailed instructions for every work-train unit in use. These instructions should list the cars and their contents, as well as the work to be done, in the order of its performance. Work-train foremen are permitted to deviate from these instructions as operating conditions, time, or items of a clean-up nature may dictate. Copies of the orders are made available to the work-train conductor and engineman, so that stops and moves to various locations can be anticipated and cost-consuming time saved.

Too often the most important man on the railroad, as pertains to work-train operation, is overlooked. He is the train dispatcher. Without him, there would be no opportunity for work-train service. Often, too, it appears as though the only thing he knows to do is to put the work train on a siding when traffic becomes heavy. Good relations with the train dispatcher are essential. He must have a knowledge and understanding of the work. It is only fair to him, to let him know in plain words what you plan to

do and to let him know sufficiently well in advance that he can plan his moves, too. What is fair to him, you will find, will be most beneficial to you. He is in business to move revenue traffic, as we all are, and when that traffic becomes congested, the non-revenue work train will suffer. To aid in our cooperation with the train dispatcher, we furnish him when he begins work each morning a copy of the same work-train orders provided for the train, engine, and work-train crew. This enables him to study what is planned, and eliminates the needless repetition of instructions from the work-train foreman to the conductor, from the conductor to the signalman or block operator, and then from the operator to the dispatcher. Every time-saving device that can be employed will reduce the work-train costs.

Use of diesel motive power has helped materially in reducing costs and each M/W man should investigate the possibility of using diesel power that may be momentarily idle during the normal daylight working hours. The ease of handling diesels, the fuel savings, and the elimination of stops for water make such investigation worthwhile. Cooperation with the operating and motive-power departments will help you to achieve your goal of being provided with diesel-powered work trains.

No plans are worthwhile unless they can be executed by a competent crew. It is important that a well-trained man lead the crew as work-train foreman. It is recognized that at locations where work trains are not operated every working day, it may not be economical to maintain a constant work-train force. However, men and foremen trained in these operations and available for work-train service will produce work-train savings that could not be obtained through the use of foremen and men picked at random. Particularly must these men be well versed in safe working methods in this business that is almost exclusively a material-handling affair, for it is in the handling of materials that most of the personal injuries sustained by railroad workers occur. Gangs chosen to meet the work train en route should be competent and acquainted with working around this type of equipment. Their work should be planned—to reduce the number of men that are hauled with the work train during the entire day; to reduce the amount of time they spend away from their regular work; and to enable them to produce as much as possible before and after their service with the work train.

Meaning of Lumber Classifications

What is meant by "stress grade" lumber? What significance should it have to the building supervisor and the carpenter foreman? Can it be distinguished readily from "yard" lumber? How?

Lumber Is Classified by Use

By W. A. Huckstep

General Building Supervisor, Missouri Pacific, St. Louis

Lumber is classified, under American Lumber Standards, according to three principal uses: Factory and shop lumber; yard lumber; and structural lumber. Factory and shop lumber is that intended to be cut up for use in further manufacture.

Yard lumber is less than 5 in. thick intended for general building purposes. It is further subdivided into: (1) Boards; and (2) "dimension" lumber. Boards are yard lumber that is less than 2 in. thick, and 8 in. or more in width. Dimension lumber is yard lumber except boards, strips and timbers. This means yard lumber 2 in. thick or more and of any width.

Structural lumber is "stress grade" lumber which consists of classifications known as "beams and stringers," "joists and planks" and "posts and timbers," to each grade of which is assigned proper allowable unit stresses.

Grade-marked lumber has its grade stamped on each piece, as well as the identity of the manufacturer and the trade-mark or symbol of the regional association under whose supervision the lumber is graded and marked.

From the foregoing a building supervisor or foreman should be able to distinguish the difference between "stress grade" and "yard lumber." The next step to determine is whether stress-grade lumber is required for the work contemplated and if it is, then to ascertain the minimum unit fiber stress necessary to support the calculated maximum load. With this determined, the particular grade of structural lumber can be selected to meet the requirements.

Just Use What We Get

By Master Carpenter

We of the division forces are furnished all grades of lumber from a central storehouse which serves several divisions. However, heavy timbers or plank, 2 in. or more in thickness, are furnished direct from the treating plant. In making our requests for lumber, we specify what it will be used for. In asking for larger sizes a sketch showing framing details must accompany the request.

This is a far cry from the days when we had the lumber and timber storage on each division and we supervisors were more or less responsible for grades, sizes and amounts.

Grades Now Standardized

By H. M. Church

General Supervisor Bridges and Buildings (Retired), Chesapeake & Ohio, Richmond, Va.

"Yard" lumber is divided into grades as defined by the American Lumber Standards as "strips" (less than 2 in. thick and less than 8 in. wide), "boards" (under 2 in. thick and 8 in. or more wide), "dimension" (from 2 in. to but not including 5 in. thick and of any width), and "timbers" (over 5 in. in any dimension). The yard-lumber grades have a wide range in quality and appearance, as well as in strength, utility, serviceability, and value. The industry's agencies have taken cognizance of this and have assigned strength ratings to some of the species.

The grading of "stress grade" lumber is a technological development and is based on the U. S. Department of Agriculture's Miscellaneous Publication No. 185, called the "Guide to the Grading of

Structural Timbers and the Determination of Working Stresses," first published in 1934. Supplements were issued in 1940 and 1948. An interesting text on the grading of structural timber has been prepared as a handbook by the U. S. Forest Products Laboratory. Similar information is contained in the National Design Specification for Stress Grade Lumber prepared by the National Lumber Manufacturers' Association.*

The structural lumber was previously graded by obscure names like select and prime structural No. 1. It is now graded on the basis of working stresses, modified for service requirements, as shown in A.R.E.A. specifications for structural lumber, tables No. 1 and 2, pages 240 and 241, Vol. 51, of the Proceedings.

Since the clear wood of each specie has an inherent strength, a percentage rating is applied to the variations in the physical characteristics of each piece. These variations include the size and shape of knots in narrow and wide faces, the total areas in the middle third of a beam and in each foot of length for square timbers, the slope of the grain, the area of checks and shakes and others.

The background to the grading of general-use lumber is one of the industrial arts of skillful craftmen who can readily distinguish the blemishes and defects in general-use grading. On the other hand, the coordination of the defects for definite stress ratings, as to size, shape, quantity and location in the piece, and so grouping them to determine the minimum strength in terms of stress value, require a more exacting technique when that stress value is determined, each piece is grade marked for complete identity.

* 1319 18th St., N.W., Washington 6, D. C.

Highway Trailers for Moving Machines

What are the advantages and disadvantages of highway trailers used to transport machines from one point to another? How can their use be made most effective? Explain.

Effective at Some Locations

By E. L. Anderson
Chief Engineer, St. Louis–San Francisco, Springfield, Mo.

To consider the above subject properly, trailers should be divided into two general classifications: (1) Small trailers for handling light pieces of work equipment, such as push cars and motor cars; and (2) large trailers for transporting large units of equipment, such as bulldozers and draglines.

Trailers under Classification 1 can ordinarily be of such weight and length that, when attached to an ordinary truck used by maintenance-of-way gangs, they will comply with the state laws. The advantages of this type of trailer are that it can be handled by a gang truck and can carry such pieces of equipment, and sometimes materials, as cannot be handled in the body of the truck because of lack of room. This permits a gang to be transported in a truck pulling a motor car and push car on a trailer to a highway crossing on a section of track where good roads are not available along the right of way or adjacent to it. There the motor car and push car can be unloaded and the gang then transported from that highway crossing to the actual point of work on the track or to a bridge by use of motor car and push car. Further advantages are obtained where roads are available by being able to handle light pieces of equipment readily with the trailer to the actual point of work on the track or on a bridge.

The disadvantages are largely those concerning the manipulation of the trailer in connection with using the truck up and down roads on the right of way or on little used back roads in getting to the point of work.

Large trailer units in Classification 2 do offer advantages in transporting heavy pieces of equipment to points of work, where good highways are available. They are particularly helpful in emergencies where it is necessary for machines to be moved quickly to a job of short duration.

The disadvantages are several. Usually a tractor unit is required to handle trailers. Good highways are required. Special permits and daylight moves are necessary in most states to comply with state laws.

On jobs of several days' duration, the trailer and tractor unit often cannot be used during the progress of the particular job and are excess equipment until needed for the transportation of machines. As a result, it is necessary to tie up considerable capital in equipment that is used only intermittently.

The most effective use that can be obtained from trailers under Classification 1 is in locations where a part of the gang's territory is not accessible to highways. Under Classification 2, trailers are most effective where the territory on which the machine is being used is readily accessible to highways and movement of the machine occurs at regular intervals, with only short periods of work time at each location. Under such a situation, trailer and tractor unit, if properly scheduled, could be used for transporting several machines from job to job. Generally speaking, study must be given to the requirements in each case to determine the economy and advisability of using trailers.

Use, in Our Case, Limited

By R. B. Chapman
General Superintendent, M/W Shops and Equipment, Southern Pacific, San Francisco, Calif.

The greatest advantage of highway trailers used to transport machines is the time saved in moving them from one job to another without the usual delay in switching or waiting for a suitable train pick-up. They also have the ability to unload at some job site rather than forcing a unit of equipment to travel long distances when unloaded from freight cars. This procedure likewise minimizes pilfering of equipment en route, which is often a source of extended delays.

The disadvantages of highway trailers include the problem of having suitable transport equipment available when needed, its inability to get within a reasonable distance of some job sites, and the cost, which is largely commensurate with the distance traveled.

The cost of moving a number of units from one job to another which requires several trips by auto transport or trailer must be compared to the cost of moving them by

freight car on which all units can be loaded, other factors being favorable.

In emergencies, when cost is subordinate to the saving of time, the highway trailer is used extensively. However, nearly all of our operators are assigned to living cars and unless this car is transported with the machines, there is little advantage in moving the equipment in advance of the operator.

Track-laying tools, in most instances, are assigned to gangs living in outfit cars and are run on flanged wheels from the set-out point to the job. Many units of dirt-moving equipment exceed the highway load limitations and cannot be moved without dismantling, in which case it costs less to move them by freight cars.

From the foregoing, it would appear that the use of trailers for the transport of machines is of limited value. This has been proved on our lines as it is seldom that such service is used when compared to the movement of machines by freight cars.

Gas-Agitation Control of Oil Fires

How can fuel-oil fires be controlled by "gas agitation?" Explain. To what extent is this method adaptable to oil-storage facilities on railroads? How effective is it? Explain.

Tests Not Yet Complete

By Miles E. Woodworth

Secretary, National Fire Protection Association, Boston, Mass.

The National Fire Protection Association is in no position at the present time to take an official stand on the use of the gas-agitation process for extinguishing flammable-liquid tank fires. An informative article entitled*, "Extinguishing Oil Tank Fires by Agitation," by J. C. Risinger, safety and fire protection supervisor, Socony-Vacuum Oil Company, Inc., has been published by the NFPA in pamphlet form as a summary of an address presented at its 1952 annual meeting. Since the publication of this article, Mr. Risinger has made extensive additional tests and compiled a detailed and complete report on the results.

As stated previously the NFPA has not as yet recognized or approved this type of system for extinguishment of oil-tank fires. The entire question has been referred to one of the NFPA committees for study, but as yet there has not been sufficient tests made for that committee to take action.

* Available for 35 cents at Association headquarters, 60 Batterymarch Street, Boston, Mass.

Method Shows Promise

By H. M. Schudlich

Engineer of Water Service, Northern Pacific, St. Paul, Minn.

The control of fuel-oil fires by "gas agitation" is a fairly recent innovation and appears to be readily adaptable to the extinguishing of fires in large fuel-storage tanks. The combustion of diesel oil takes place under certain defined conditions in which the oil temperature must be high enough to emit flammable vapors and sufficient oxygen must be present to support the combustion. The flame supports itself by furnishing the heat for further vaporization of the oil and continues until the conditions become unbalanced thereby stopping further combustion.

The "air agitation" method accomplishes its purpose by churning up the oil body through the introduction of compressed air into a grid system installed in the bottom of the storage tank. The violent agitation raises the cold oil from the bottom and brings it to the surface, thereby reducing the temperature below the flash point. The flame is extinguished because there is not enough oil vapor present to support combustion. When either liquid carbon dioxide or compressed nitrogen are discharged into a manifold connected to the grid instead of compressed air, the gas evolution accomplishes the same purpose but with the added advantage of the presence of a flame smothering gas.

Tests which have been made to date indicate that very startling results can be obtained, but there is still much experimental work to be done before the conclusive merits of the method can be fully known. If the further tests show this method of controlling oil fires is fully acceptable, it will be possible to run air lines to the large vertical fuel tanks and thus provide protection at a great saving. It would eliminate large water mains and in cold areas the expense of protecting such water lines against freezing.

The application of air or gas agitation for fire control is limited to large primary storage tanks. Since at the present time the majority of railway fuel-storage tanks are of low capacity, horizontal construction, they will therefore still require fog or foam fire protection.

Qualifications of a Yard Foreman*

What, if any, are the special qualifications required of a track foreman in a busy yard?

Must Want to Be Railroader

By N. F. Alberts

General Track Foreman, Milwaukee Road, Chicago

My views on this question are that any special training needed can be acquired by working in an extra gang which is normally engaged in various jobs, such as handling heavy-repair work, relaying rail and switches, surfacing and reballasting track and in handling tie renewals.

An organization of this kind is usually under the supervision of a high-class foreman or a general foreman. My experience in developing men into good foremen has taught me that a young man, say between the ages of 18 and 35, who has at least a high-school education, can be easily developed into a high-class foreman or supervisor, if that is actually what he wants. He must, however, have a desire to spend his future life in track work on the railroad. Secondly, he must show a willingness to learn the job and to

* Other answers received to this question were withheld because of their comprehensiveness for later presentation as a feature article.

take everything that goes with it, the good with the bad. He must have this willingness, although realizing that track work requires one to be called at any hour as well as to work under unfavorable weather conditions. It was the general contention among track men at one time that a good extra-gang foreman on main-line work would not turn out quite favorably in a yard section and that a good yard foreman would be a failure on a fast main-line section. This is untrue because experience has shown that an excellent foreman on a mainline job will prove equally as good on a yard job and vice versa.

When any young man is hired, the first thought in mind should be that he is a potential candidate for a foreman, a supervisor or an official position. His foreman and supervisor, through close contact and personal interest, will soon determine if the new employee has the qualities desired of a candidate to be developed into a foreman or into a supervisory position. If he shows intelligence, initiative and love for his work, he should be given every opportunity to become acquainted with the various practices on the individual railroad. As he moves along and displays willingness, he should be treated in such a manner that will give him hope of security, and a feeling that the management recognizes his good efforts on the job and considers him in line for a better job.

He will be provided first with a set of safety rules and given to understand that safety is of the first importance. He shall be given, or have made available to him, drawings of switches and turnouts, as well as frogs and crossings of various angles. He will also need drawings of various classes of material, tools and equipment. He should be delegated to handle minor details and gradually be placed to lead one, two or more men. The success of any young man who enters as an employee in the track department rests solely on the attitude taken by the foreman and supervisor under whom he is employed. If the foreman strives for good work, the young employee will grow up on the job with the impression that only good work is wanted, and that the greatest satisfaction on a foreman's or supervisor's part is in a job well done. Railroads having the apprenticeship or student-foreman plan, are doing well in this regard because at least two out of three students develop into good foremen. In time these railroads will be well repaid for their efforts. Although other railroads, due to union restrictions, have not gone into similar plans, I thing they are excellent for building men into future foremen and other supervisory positions.

In my own experience, having handled practically all kinds of track work, in construction as well as maintenance, on main lines and in yards, I have always taken a deep interest in young men and while many of them did not come up to expectations, some of them have become excellent foremen and supervisors. Some years ago, when I was an extra-gang roadmaster in charge of one of our large ballast gangs, a young man acted as a student timekeeper. My attention was directed to the fact that this employee was sold more on foremanship than he was in time keeping or clerical work. He was later trained to operate a power jack and did a good job. He was then made an assistant foreman, doing an equally good job. As he went along, he became an extra-gang foreman, serving as a relief foreman on a fast main-line section and now is acting general track foreman in a busy terminal yard.

The special qualifications required of a track foreman in a busy yard may be summed up as follows. He must: (1) Be able to organize and to handle men and to make out the required reports; (2) be able to plan a work program; (3) have a good knowledge of the principles of switches and turnouts, frogs and crossings of various angles and be capable of making installations; (4) know how to plan work and prepare materials for work to be done at locations where the track can only be obtained for short periods, because of frequent train or engine movements; (5) know and understand the various classes of material required to maintain his railroad, the importance of material classification, new and old, good and secondhand, usable and suitable for use on secondary tracks or scrap; (6) be able to cooperate with other departments when making rail or track changes; (7) deal intelligently with the heads of the various sub-departments, especially yardmasters, tower men, locomotive and car-department foremen, signal men, station agents and others; (8) be able to delegate men under his supervision to perform various jobs at different locations, especially during snow storms when men will be sent out to keep switches at interlocking plants or yard leads free from snow and ice; (9) know that the safety of all employees in the yard as well as the safety of his own men is assured by not leaving unsafe track surroundings where work is being done and, if for any reason an unsafe condition must be left, to handle it with the proper officers so that all concerned will be notified; (10) become acquainted with material requirements, thus avoiding a surplus of materials carried in stock, representing large sums of money; (11) be alert and quick in detecting conditions in track that need immediate attention, in making decisions, and in making repairs to switches and other components of the track which appear worn or damaged.

Basic Training Important

By B. F. McDERMOTT

Roadmaster, Chicago & North Western, Brookings, S. D.

First of all a track foreman, regardless of whether he is in charge of an outlying section or in charge of a busy yard has throughout the years, without a doubt, been entrusted with one of the most responsible, most important, most vital positions on a railroad. Needless to say, he has and still does perform more unselfish service outside of his own department than any other employee. His faithfulness and devotion to duty, as the records of railroading will prove, cannot be paralleled. Many of his deeds, even beyond the call of duty, go unnoticed because he is generally too modest to bring them to light. The importance of his position is second to none. He and his men could appropriately be called—"the infantry of the railroad."

A track foreman in a busy yard is a very valuable employee. As the roadmaster's "other right arm," he should be well trained in all phases of track maintenance, especially in maintaining all types of switches and turnouts. His prior training, if possible, should consist of first having had experience as an assistant foreman in a yard, preferably a busy one. As appointments and promotions are made, he should also have experience as a track foreman on an outlying section and then eventually, as his seniority and ability will permit, he may qualify for a position as a track foreman in a busy yard. His basic training is important.

He should be able to supervise a number of men, whether it be a small gang of seven or eight men or a maintenance gang of 30 or more. He must be able to plan his work ahead and progress the important part of it with vigor yet not let minor or petty problems upset his program.

Of course he will receive instructions from his roadmaster on what work there is to be done. However, he should be able to take over his duties as track foreman without continually writing or running to the roadmaster for advice on track problems or other problems of a minor nature. In cases of emergency, such as derailments, he should be able to take over in the absence of the roadmaster and carry on such work satisfactorily.

He should be able to order intelligently the necessary track material for his yard and to use such material economically as needed. He should be able to compile intelligent reports of material received and used as well as compile payrolls and other reports and correspondence.

He should be able to get along and cooperate with other employees outside of his department. However, he should be able to stand firm on his rights as a track foreman and not allow other departments to "push" him around and do unnecessary chores for them which, if continued, might cause him to neglect his important work or put him in the "putterer" class.

He should be able to get along with all industries that have their sites adjacent to or on railroad property. He should be courteous and cooperative to such railroad patrons and if any situation arises beyond his authority he should contact the roadmaster at once for further action.

He should have a good, sound, practical education, and if he did not have the opportunity to attend high school or college he should avail himself of the various track courses which are offered ambitious employees who wish to make a career of railroad work. In conclusion, good, young, ambitious track foremen make excellent timber for future assistant roadmasters and eventually roadmasters.

Expansion Bearings for Steel Bridges

What type of expansion bearing is most suitable for long-span steel railroad bridges? Why? What maintenance attention should such bearings be given to be continuously effective? How often? Explain.

Rockers or Rollers Okay

By E. S. Birkenwald

Engineer of Bridges, Western Lines, Southern, Cincinnati, Ohio

Either rockers or rollers may be used at expansion bearings for long-span steel railroad bridges. Some bridge engineers prefer the rocker type of expansion bearing, while others feel that segmental rollers provide the best type of expansion. It is my opinion after using both types that, if properly designed, each will provide a satisfactory type of expansion bearing which requires a minimum of maintenance.

Although the rocker type is easy to keep clean, some maintenance trouble may develop from the galling of the pin between the top casting and the rocker. Closer tolerances in manufacture, use of lower bearing pressure on the pin, and perhaps use of an Alloy E phosphor-bronze bushing for the pin, in accordance with current ASTM Specifications, Designation B-22, should prevent galling. It is important that the rocker and base plate details provide for holding the rocker in line and to resist uplift.

The roller type of expansion bearing should be kept as simple as possible so that it may be readily cleaned. This can be done by gearing each roller to upper and lower plates without using guide bars and stud bolts, which are a source of trouble.

The use of cast corrosion-resisting alloy rollers and plates for the roller type should reduce future maintenance by eliminating corrosion of surfaces which cannot be protected. Stainless-steel inserts can be used between rocker and base plate in rocker-type expansion bearings to accomplish the same thing.

Rockers Are Preferable

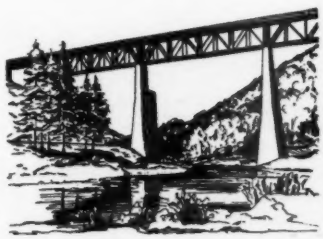
By J. F. Marsh

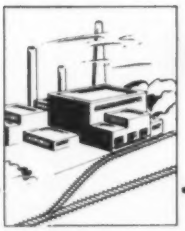
Engineer of Bridges, Chicago, Rock Island & Pacific, Chicago

In A.R.E.A. Bulletin 506, pages 905 and 906, there appears a restatement of Article 444 and 445 of the Specifications for Steel Railway Bridges. This revision was adopted at the March convention. It deals with the design of shoes and pedestals, base and masonry plates, rockers and rollers. It was written after a great deal of thought had been given to the matter by the Committee on Iron and Steel Structures. Article 445 states that rockers shall be used in preference to rollers where conditions permit. In the second paragraph of the Article design limitations for rollers are given.

There may be conditions where heavy loads obtain and distances from pin to masonry or width of bridge seat make it necessary to use rollers. However, as stated above, rockers shall be the first preference. In order to prevent etching or flaking on the pin surface, we specify that all rocker pins shall be made of forging-quality steel.

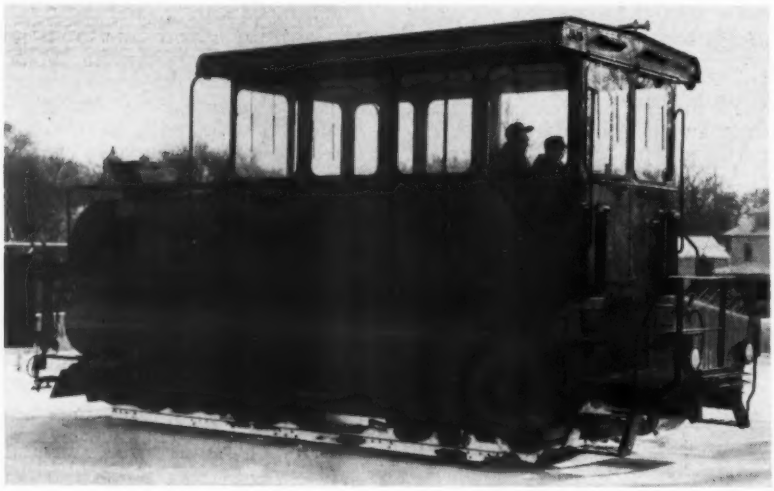
With regard to maintenance, the setting of shoes shall be checked carefully twice a year and the position of rocker or roller noted with respect to the temperature. In some cases, after a period of time, the movable parts will be badly out of line and it will be necessary to reset them. In such cases it may be necessary to pull the anchor bolts and reset the base plates. In some cases shims may have to be installed to level the base plates so that the bearings will function properly. Shoes should be cleaned and oiled periodically. Some roads have found it advantageous to apply a generous amount of grease-type paint to assure proper functioning of the rotating and rolling parts of the shoes.





PRODUCTS OF MANUFACTURERS . . .

. . . new, improved equipment, materials, devices



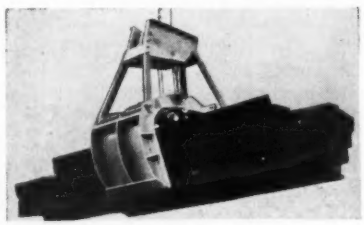
IMPROVED WEED SPRAY CAR

FAIRMONT Railway Motors, Inc., Fairmont, Minn., has recently improved its large weed spray car. The machine is now known as the Class W66 Series B. The improvements include a more powerful propelling engine, an improved driving arrangement, larger capacity pumps and air compressor, and relocation of the tank agitation system. The new propelling engine delivers 130 hp., and has overhead valves and removable cylinder sleeves. This is approximately a 16 per cent increase in power over the former machine, and the manufacturer claims that the new engine will provide greater efficiency, especially when operated under near full-load conditions. A three-speed transmission with full reverse is now used in the drive. This gives an adequate choice of operating speeds, and the full reverse makes the three speeds available for either direction of travel. The new transmission is also said to provide easier and more positive shifting.

The axle drive gear is of stronger construction on the new model, and since the directional gears and shifting parts have been eliminated, it is also simpler. Both the spray pressure pump and the loading and agitation pump have been redesigned to provide approximately 30 per cent greater capacity thus assuring ample reserve for all spraying needs, reducing tank filling time, and increasing agitation of liquid in the tank. A 20 per cent increase in compressor capacity is said to insure an adequate supply of air at all times for controlling the spray valves, raising the wings, and operating the brakes, horns, windshield wipers, and sanders. The hydraulic jets, located in the tank to provide agitation to the spray liquid, have been repositioned for easier installation and maintenance.

TIE GRAPPLE

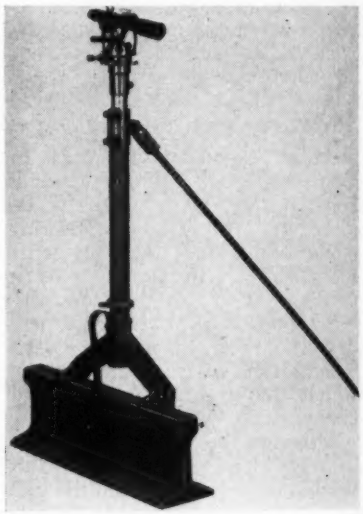
A NEW tie grapple, designed for use in loading or unloading ties, has been marketed by the Blaw-Knox Company, Pittsburgh, Pa. The



manufacturer claims actual performance tests indicate that this grapple will save up to one third of the man-hours required to load or unload ties and up to one half the man-hours required for piling ties. Except for cast steel sheaves and forged steel corner bars, the entire device is fabricated by welding from rolled steel. The grapple is 3 ft. wide and opens to a distance of 6 ft. 6¼ in. between tines. It weighs 2,000 lb.

TRACK-LINING INSTRUMENT

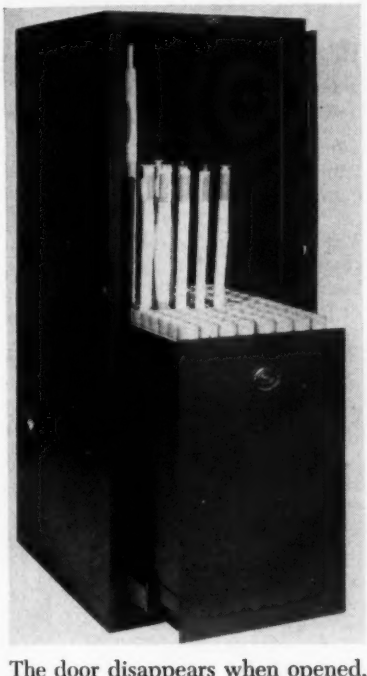
THE National Optical Trackliner, manufactured by the National Blue Print Company, Chicago, has recently been improved. This instrument is essentially a short telescope mounted on a vertical staff which has a two-legged shoe that is set on



the top of the rail and clamped to it with a steel spring, while a side tripod leg holds the instrument in an upright position. It is then used to sight along the gage side of the line rail while trackmen line the track to its true alinement. The improvements include sealed-in ball-bearing telescope axis and centers which are dust proof and permanently lubricated, a telescope of the internal-focusing type with coated lenses, and an extension-type tripod that permits quick fastening and removal from the rail.

ROLL FILE FOR MAP STORAGE

THE Ross-Martin Company, Tulsa, Okla., has recently made available the Kraftbilt V-96 vertical Rollfile for the storage of maps. Utilizing the principle of filing in a drawer, the unit contains 96 tubes to hold an equivalent number of maps, drawings, tracings, or blueprints up to 54 in. long when they are rolled. Letters and numbers on drawer ledges allow indexing of the tubes.



The door disappears when opened, and when closed is said to effectively keep out dust, dampness, bugs and fire. The cabinet is mounted on ball-bearing casters and is available in two colors—modern gray and olive green. The cabinets are trimmed in brushed bronze.

30-TON TRUCK CRANE

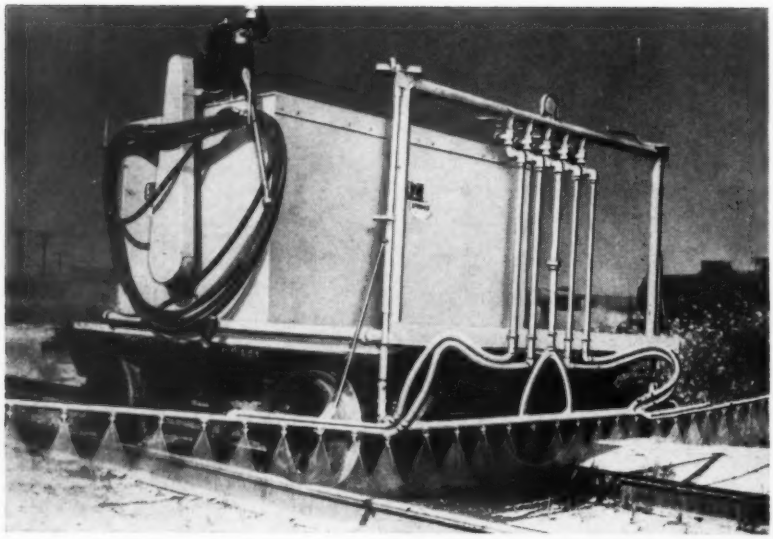
THE Thew Shovel Company, Lorain, Ohio, has recently announced an addition to its line of Lorain cranes. A machine with a lifting capacity of 30 tons is now available in both the Moto-Crane and self-propelled models. The new units are designated as the Lorain Moto-Crane Model MC-524, and the Lorain Self-Propelled Model SP-524. The Moto-Crane consists of a 30-ton capacity turntable mounted on an automotive type 3-axle carrier having 10 speeds forward and two reverse. It can travel at speeds up to 30 m.p.h. and is equipped with double rear axle bogies. Both gasoline and diesel power plants are available. Air brakes, air assist steering and accessories for highway operation plus many extras are standard equipment. The MC-524 is convertible to shovel, crane, clamshell, dragline or hoe and is rated in the 1 cu. yd. class as a shovel.

The self-propelled model, built for more limited travel needs, consists of the same basic 30-ton turntable mounted on a 3-axle carrier that is propelled by the turntable engine, which may be either gasoline or diesel. Drive is on the two rear axles only. There are provided four speeds in both directions with a top travel speed of 7½ m.p.h. Air brakes and full air steering are operated from the turntable cab.

Both machines are equipped with crane booms of sturdy construction that can be extended to 100 ft. in length and to which can be added a 25-ft. tip extension. The new boom is approximately ⅓ wider and 1/3 deeper in cross section than on previous models, is of all-welded construction and sections are pin-connected. A floating harness is provided for 8-part reeving of the boom hoist cable. The boom head is equipped with three main boom head sheaves, plus auxiliary deflector sheaves that permit reeving up to six parts of hoist line without the use of a top block. A telescopic type gantry is available on both models for long boom operation.

REVERSIBLE IMPACT WRENCH

A NEW Thor ¾-in. portable pneumatic reversible impact wrench has been announced by the Independent Pneumatic Tool Company, Aurora, Ill. Equipped with a side handle and trigger-type throttle, the new wrench weighs 5¾ lb., and measures 8^{11}⁄$_{16}$ in. in length. A reversing valve is located at the back of the tool, and the wrench may be equipped for either vertical or horizontal suspension on assembly lines, or for permanent locating of the unit from overhead balancers. The manufacturer claims that the key feature of the new tool is an exclusive rolling ball-type cam which increases efficiency and the steady functioning of the impacting mechanism. The wrench is available with two type of spindles—the size 24, with a ¾-in. square drive, and the size 24S with a ⅞-in. hexagon quick change chuck integral with the spindle. The wrench is powered by an air motor which transmits power to the impact mechanism through a torque-increasing planetary gear system. The heat-treated alloy-steel gear elements are precision finished and mounted in full anti-friction bearings. Additional features of the new air-driven impact wrenches are extra-large rotor pinion and idler gears, and easily operated throttle control.



WEED SPRAYER

THE W. T. Cox Company, Santa Ana, Cal., has announced the availability of the "Hykil" Model R-25 weed sprayer especially designed for treating yards, industrial spurs and off-track areas usually reached by hand cutting methods. It can also be employed effectively for main-line work. The unit can be mounted on a standard motor-car trailer with no conversion or attachments necessary. The R-25 has a capacity of 25 gal. per min. at 60 p.s.i., and the manufacturer claims that it will apply any standard weed killer at a rate of up to 225 gal. per mile over a 16-ft. width, while traveling at a speed of 6 m.p.h. Standard equipment on the weed sprayer includes: Either a Briggs & Stratton Model 14, 5.1-hp. gasoline engine, or a Wisconsin Model AKN, 5.8-hp. engine, either type operated by a remote hand throttle and equipped with oil bath air cleaners; a heavy-duty pump with replaceable bronze liners and impeller, stainless steel shaft, outboard ball bearings, flexible direct-drive coupling to engine, self by-passing, and a 0-300 p.s.i. pressure gage; a welded steel tank with internal bracing, welded pipe fittings, and large manhole-type fill opening. The standard model tank holds 400 gal.; a special tank, designated R-25C, will hold 600 gal.

Spraying equipment includes one rigid boom with nozzles for spraying between the rails, two flexible mounted side booms, and two 50-ft. lengths of spraying hose with hand spray guns. The side booms are divided into two sections, with individual cut-off valves in each. A manually operated swivel enables the operator to swing the booms back against the car for track clearance. Adjustable linkage provides vertical positioning of the side booms as desired. "Teejet" spray nozzles with interchangeable tips are furnished. A separately powered agitator for use with weed killers requiring continuous mixing is available as an accessory. The Model R-25 weighs 815 lb.

NON-SELECTIVE HERBICIDE

THE ESTON Chemicals Division of the American Potash & Chemical Corp., Los Angeles, has announced the availability of a new and improved non-selective herbicide being marketed under the trade name Tumble-Weed 25, with wide uses as a weed killer and soil sterilant. The herbicide is a scientifically compounded material containing 25 per cent sodium chorate and a minimum of 75 per cent soluble borates plus a wetting and spreading agent. Properly applied, it is said to kill weeds and grasses and leave the soil sterile for a year or longer. As a general weed killer it can be applied to both broad-leaf and narrow-leaf types of weeds and grasses. The new product is claimed by the manufacturer to be particularly valuable for killing weeds in non-cultivated areas such as around roadsides, fences, ditch banks, railroad right of ways, industrial sites, buildings, storage tanks, and gravel and cinder paths where they constitute a nuisance or fire hazard. It may be applied to road and walk surfaces prior to the application of blacktop or concrete to inhibit the later growth of weeds which cause cracking. Among the weed pests it is designed to control are Bermuda grass, bind weed, hoary cress (whitetop), quack grass, Johnson grass, Canada thistle, and leafy spurge. Tumble-Weed 25 is packaged in 50-lb. polyethylene-laminated valve bags.

TRUCK-MOUNTED SHOVEL CRANE

A NEW, heavy-duty truck-mounted shovel crane has been announced by the Schield Bantam Company, Waverly, Iowa. Rated at 6 tons capacity, the ¾-cu. yd. Model T-35 is available with a complete line of matching attachments including shovel, clamshell, dragline, back hoe, magnet, wood grapple and pile driver. Major improvements made over the previous model M-49 machine include a stronger frame, larger shafts and bearings, larger diameter center

pin, newly designed trunnion base with wide-trunnion rollers, and the use of four adjustable cam-type hook rollers instead of three. Drum clutch surface has been increased in the T-35, as has the swing clutch surface. An increase in drum-braking surface and boom hoist braking surface is said to provide extra safety and better load handling accuracy. Redesign of the basic unit cab is said to have resulted in a 37.8 per cent increase in operator visibility. Sliding safety glass panel windows are standard equipment. Other features of the new machine include anti-friction bearings, machine-cut gears, internal expanding band-type clutches with molded linings and positive action, external contracting brakes.

READE
EST
1883

"GENTLEMEN" . . .

"THE SUBJECT FOR DISCUSSION TODAY IS THE WEED AND BRUSH CONTROL PROBLEM OF THE C M & W RAILROAD"

A typical conference to discuss new developments in Vegetation Control

Forty years of continuous service to the Railroads of America, places us in an enviable position to discuss and offer suggestions for controlling Weeds and Brush on railroad right of ways.

Our staff of highly trained specialists, is constantly alert to evaluate new chemicals, new processes and new procedure. They are men with railroad maintenance know how, chemists who devote their entire time to laboratory and field research, and agronomists who know the name and habits of every type of plant life.

Passing along to the railroads this important, unbiased information, is just a part of Reade's broad and comprehensive service.

Whether the Weed or Brush control program is $3,000.00 or $300,000.00 we endeavor to advise the best selection of chemicals for the particular roadbed on which the chemical is to be applied.

WE INVITE YOUR INQUIRY

THE READE MANUFACTURING CO., INC.

Jersey City 2, N. J.

Works: Jersey City • Chicago • Kansas City • Minneapolis • Birmingham • Stockton.

THE MONTH'S NEWS...

. . . among railway men—the associations—the suppliers

Changes in Railway Personnel

General

C. H. Manning, trainmaster of the Peninsula subdivision of the Chesapeake & Ohio, and an engineer by training and experience, has been appointed assistant superintendent of the Richmond division at Richmond, Va.

J. B. Singleton, trainmaster on the Southern at Knoxville, Tenn., and an engineer by training and experience, has been appointed superintendent at Selma, Ala.

M. I. Dunn, whose appointment as assistant vice-president—construction and maintenance—system of the Chesapeake & Ohio, with headquarters at Huntington, W. Va., was recently announced (RT&S, Mar., p. 302), was born at Scottsville, Va., on October 29, 1899, and joined the C&O as a rodman in 1916, resigning three years later to enter college. After graduation from Washington and Lee University in 1923, Mr. Dunn re-entered the service of the railroad as an instrumentman in the construction department at Huntington. He has also served as assistant engineer in

M. I. Dunn

the maintenance of way department at Clifton Forge, Va., assistant division engineer at Richmond, Va., assistant division engineer and division engineer at Huntington, trainmaster at Handley, W. Va., and St. Albans, and trainmaster, division superintendent and general superintendent at Peru, Ind. Appointed assistant superintendent freight transportation at Richmond on December 1, 1950, he was promoted to superintendent freight transportation in March 1951, and assistant general manager of the Chesapeake district in 1952—the position he held at the time he received his recent appointment.

A number of recent changes among operating and administrative personnel on the Pennsylvania have involved officers with engineering training and experience. **J. Benton Jones,** general manager of the Western region of the Pennsylvania at Chicago, has been appointed vice-president in charge of real estate and taxation at Philadelphia, Pa., to succeed **Walter W. Patchell,** who has been appointed vice-president assigned to passenger services. **Allen J. Greenough,** general manager of the Central region at Pittsburgh, Pa., has been appointed vice-president of the Eastern region at Philadelphia. **James L. Cranwell,** assistant vice-president, has been advanced to vice-president with headquarters as before at New York. **John D. Morris,** assistant general manager of the Eastern region at Philadelphia, has been advanced to general manager of the Western region to succeed Mr. Jones. **Morton S. Smith,** assistant general manager of the Central region at Pittsburgh, has been advanced to general manager of that region to succeed Mr. Greenough. **R. Warren Grigg,** superintendent of the Maryland division at Baltimore, Md., has been named assistant general manager of the Eastern region to succeed Mr. Morris. **Buford W. Tyler,** superintendent of the Pittsburgh division, has succeeded Mr. Smith as assistant general manager of the Central region. **George C. Vaughan,** superintendent of the Panhandle division at Pittsburgh, has been transferred to the Maryland division to succeed Mr. Grigg, and **Nathan L. Fleckenstine,** division engineer on special duty, office of the vice-president of the Eastern region, has been appointed superintendent at Pittsburgh to replace Mr. Vaughan. **Thomas M. Goodfellow,** superintendent of the Fort Wayne division, has been transferred to the Pittsburgh division to succeed Mr. Tyler, and **H. H. Vaughn,** assistant superintendent at Indianapolis, Ind., has been promoted to superintendent of the Fort Wayne division to replace Mr. Goodfellow.

Engineering

W. W. Edwards, assistant engineer—valuation, of the Chicago & Illinois Midland, has been promoted to engineering assistant—valuation, with headquarters, as before, at Springfield, Ill.

Homer B. Rutherford, whose promotion to division engineer on the New York Central at Watertown, N. Y., was recently announced (RT&S, Feb., p. 168), was born at Madrid, N. Y., on December 27, 1898, and received his B.S. degree in civil engineering from Clarkson College of Technology in 1921. Entering the service of the NYC as a chainman on the engineering corps at Oswego, N. Y., on July 8, 1921, he subsequently served as rodman and transitman at that location until July 1, 1930, when he was transferred as transitman to Watertown, N. Y.

Homer B. Rutherford

Appointed assistant supervisor of track on October 1, 1934, Mr. Rutherford held that position successively at Malone, Newburgh, and Beacon, N. Y., until January 15, 1943, when he was advanced to supervisor of track at Corning, N. Y. On January 1, 1946, he was appointed assistant division engineer at New York, and the following month was transferred in that capacity to Jersey Shore, Pa., where he remained until August 1, 1947, when he was transferred to Buffalo. It was as assistant division engineer at Buffalo that Mr. Rutherford received his recent promotion.

R. E. Knapp has been appointed division engineer of the Panhandle division of the Atchison, Topeka & Santa Fe with headquarters at Wellington, Kan., succeeding **R. J. Gatewood,** who has retired after nearly 50 years of service.

J. D. Anderson has been named division engineer on the Canadian Pacific, with headquarters at Winnipeg, Man., succeeding **F. A. Felstead,** who has been transferred.

R. E. McLaughlin, assistant engineer on the Kansas City Southern, has been promoted to division engineer at Shreveport, La., succeeding **W. J. Lank** who has retired.

(*Please turn to page* 494)

ALADDIN LUBRICATOR

In the last six months

27

U. S. railroads have installed Aladdins

•

You can buy TWO Aladdins without an "A. F. E."

Only one moving part:

The "Aladdin" has no pumps or valves. A spring-loaded piston, the *only* moving part, descends in a cylinder under vibration from traffic—and delivers the required amount of standard grease *automatically* to the running side of the rail.

One-man installation:

No track alteration. rail drilling or gauge widening is required to install the "Aladdin". And since it weighs only 50 pounds—it can be handled and installed by one man *in less than half an hour.*

Proved performance:

Today, thousands of "Aladdin" Lubricators are in use on main lines... in yards... under one or two-way traffic... in all climates. The "Aladdin's" low cost means you can now economically specify a lubricator for every rail wear location. Why not check *your* lubricator requirements today? Write for Bulletin A.

H. T. KENNEDY COMPANY, Inc., 37 Wall St., New York 5, N.Y.

Railway Personnel (Cont'd)

Bert L. Beier, whose promotion to engineer maintenance of structures on the Delaware, Lackawanna & Western at Scranton, Pa., was recently announced (RT&S, March, p. 304), is a native of

Bert L. Beier

Buffalo, N. Y., and a graduate of Rensselaer Polytechnic Institute. He entered the service of the DL&W in 1926 with an engineering corps at Buffalo and in 1941 was appointed assistant engineer at that location. On January 1, 1945, he was advanced to division engineer, the position he held prior to his promotion on February 1.

Jay H. Schoonover, who has been promoted to division engineer on the Delaware, Lackawanna & Western at Scranton (RT&S, March, p. 304), attended Syracuse University. Following employment by the Eclipse Machine Company at Elmira between 1922 and 1929, he joined the engineering corps of the Lackawanna on September 1, 1929, and remained until November 30, 1934. He was associated with the New York State Electric & Gas Corp. at Elmira, continuing with that company and with Remington Rand for three years. On December 1, 1938, Mr.

Jay H. Schoonover

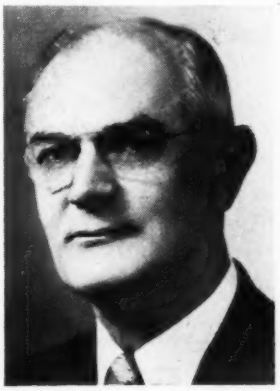
Schoonover returned to the engineering corps of the railroad at Buffalo and Hoboken, and on March 1, 1949, was appointed assistant engineer at Scranton, the position he held prior to his promotion on February 1.

Robert F. Bush, who has been promoted to engineer maintenance of way on the Delaware, Lackawanna & Western at Scranton (RT&S, March, p. 304), was born at Elmira, N. Y., and is a civil engineering

Robert F. Bush

graduate of Pennsylvania State College. He was first employed as a rodman by the city of Kane, Pa., and later by the signal department of the Pennsylvania. Following four years' service with the United States Army Engineers, from which he retired as a captain, Mr. Bush joined the DL&W on November 12, 1945, with an engineering corps at Buffalo. He was appointed assistant engineer on September 1, 1946, supervisor of track at Scranton, February 16, 1948, and inspector maintenance of way at Scranton, January 1, 1950. He was serving in the latter capacity when he received his promotion on February 1.

Lacy L. Shirey, whose promotion to bridge engineer of the Chesapeake district of the Chesapeake & Ohio at Richmond, Va., was recently announced (RT&S, Mar., p. 309), was born at Union, W. Va., on May 23, 1891. He received a B.S. degree in civil engineering from Washington and Lee University in 1916; a Civil Engineer degree from Cornell University in 1920, and a Civil Engineer degree from Washington and Lee University in 1929. Mr. Shirey began his railroad career with the Cleveland, Cincinnati, Chicago & St. Louis in November 1917 as assistant engineer on corps, in



Lacy L. Shirey

which capacity he served, successively, at Mattoon, Ill., Indianapolis, Ind., and Galion and Springfield, Ohio, until July 1924, with the exception of the period from June 1922 to May 1923, when he held the position of designer in the bridge department at Cincinnati, Ohio. Entering the service of the C&O at Richmond in July 1924 as a bridge designer and checker, he was promoted to assistant engineer in the bridge department in July 1928 and designing engineer in that department in April 1943. In June 1946 he was named assistant bridge engineer—the position he held prior to his recent promotion.

William H. Hoar, engineer in charge of construction of the Norris yard and terminal facilities of the Southern, has been appointed division engineer with headquarters as before at Birmingham, Ala., to succeed **George A. McRoberts,** who has been transferred to Somerset, Ky.

W. D. Kirkpatrick, assistant engineer on the Missouri Pacific at St. Louis, Mo., has been promoted to assistant to the chief engineer, system, at that point, succeeding **W. J. Burton,** who has been assigned to special duties in connection with

ADDITIONAL INFORMATION

On Any of the Products Mentioned in This Issue

The following compilation lists all products mentioned in the advertising and editorial pages of this issue. If you desire additional information on any product shown, use one of the addressed postage paid cards below to request it. Write in the product and page number in each case. The information will come to you, without obligation, directly from the manufacturer.

Products Index

	Page
Adzing Machine	456
Air-Cooled Engines	499
Aluminum Track Jacks	500, 508
Anchor, Rail	513
Anti-Checking Irons	457
Axles	462
Backfill Blade	446
Backfill Tampers	464
Ballast Cleaning Service	447
Ballaster	456
Ballast Extruder	499
Ballast Maintenance Cars	462
Bearings	462, 518
Bit Sharpeners	499
Black Gum Crossing	505
Blowers	461
Bolt, Rail	517
Bolt Tighteners	454
Breaker, Paving	464
Brush Killer	437, 450, 490, 491 BC
Brush Killing Service	438, 491
Bulldozer	445
Burners, Weed	454
Cabinets & Files, Map	489, 508
Cars, Inspection	462, 510
Cars, Motor	454, 462, 510
Chain Saws	461, 502
Chemical Sprayers	454
Chemical Weed & Brush Killer	437, 450, 490, 491, BC
Chemical Wood Preservative	428, 502
Clamshells	506
Clay Digger	464
Cleaners, Flangeway	454
Cleaner, Yard	456
Compressors	446, 464
Concrete Mixer	494
Corrugated Metal Structures	458
Cranes	429, 435, 448 449, 489, 490, 496, 506, 511, 514
Cranes, Locomotive	435
Cranes, Truck	489, 490
Crawler Cranes	429, 435, 506
Crawler Tractor	445, 503
Creosote Tie Sprayers	454
Cribbing Machine	456, 476
Cross Grinders	499
Crossings, Pressure-Creosoted	505
Cut-Off Wheels	499
Cutters, Tie	454
Derails	513
Derrick Cars	462
Diesel Engines	445, 451,499
Diggers, Clay & Trench	464
Dragline	429, 501, 506
Drainage Structures, Corrugated Metal	458
Drill, Power Track	498
Drill, Rail	456, 499
Drill, Rock	446, 464
Drill, Tie	456
Drivers, Sheeting	464
Driver, Spike	446,454
Electric Plants	508
Electrodes	433
Engine Generators	513
Engines, Diesel	445, 451, 499
Engines, Motor Car	462
Excavating Service, Ballast	447
Excavators	511
Extinguisher Cars	454, 462
Extruder, Ballast	499
Fasteners	517
Files & Cabinets, Map Storage	489, 508
Flangeway Cleaners	454
Flexible Shaft Machines	502
Foundation Piles, Monotube	432
Front End Loader	446
Gang Cars	462
Generator	461
Generators, Engine	513
Grader	441, 445
Grapples, Tie	488, 517
Grinder, Rail	456, 499
Grinder, Switch	499
Grinding Wheels	499
Grouting Outfit	462, 511

No Postage Stamp Necessary If Mailed in the United States

BUSINESS REPLY CARD
First Class Permit No. 32418, Sec. 34.9, P.L.&R. Chicago, Ill.

Postage Will be Paid by Addressee

RAILWAY TRACK AND STRUCTURES
30 Church Street
New York 7, New York

READER SERVICE DEPT.

RAILWAY TRACK AND STRUCTURES May, 1953

Please send me additional product information as requested below.

☐ Literature Only ☐ Desire to see Representative ☐ Price Data

Product and Page No. .....
" " " .....
" " " .....

Name .....

Title or Position .....

Company .....

Address ..... City ..... Zone .... State ....

(Please Fill Out Card in Full)

	Page
Heaters, Switch	497
Impact Wrenches	489
Inserter, Tie	456
Inspection Cars	462, 510
Irons, Anti-Checking	457
Jacks	456, 500, 508
Joint Lubricators, Power	454
Joint Oilers, Rail	454
Joints, Rail	FC
Lag Screw	517
Lining Instruments, Track	488
Loader, Front End	446
Locomotive Cranes	435
Lubricator, Power Joint	454
Lubricator, Rail	493
Lumber, Pressure Treated	512
Magnets	506
Map Storage Files & Cabinets	489, 508
Mixer, Concrete	494
Monotube Piles	432
Motor Cars	454, 462, 510
Motor Car Engines	462
Motor Graders	445
Mowers	462
Nippers, Rail	454
Nippers, Tie	499
Oilers, Rail Joint	454
Oil Spray Cars	462
Paint Spray Equipment	515
Paving Breakers	464
Piles, Monotube Steel	432
Pipe	434
Power Jack	456
Pressure-Creosoted Timbers	505
Pressure Treated Lumber	512
Puller, Spike	456
Puller, Tie	456
Pullshovel	429
Pumps	461, 464, 508
Push Cars	454, 462
Rails	430
Rail Accessories	430
Rail Anchor	513
Rail Bolt	517
Rail Drill	456, 499
Rail Grinder	456, 499
Rail Joints	FC
Rail Joint Oilers	454
Rail Nippers	454
Rail Saw	459
Rail Testing Car	453
Rail Welding Service	440
Rock Drills	446, 464
Rubber-Tired Cranes	435, 448, 449
Rubber-Tired Tractors	431, 455
Rust Preventative	452, 507
Saws, Chain	461, 502
Saw, Portable Rail	459
Scrapers	431
Screw, Lag	517
Section Cars	462
Sharpeners, Bit	499
Sheeting Drivers	464
Shifter, Track	456
Shovels	429, 506
Snow Plow	446
Spacer, Tie Plate	454
Spike Driver	446, 454
Spike Puller	456
Spray Cars, Oil	462
Spray Cars, Weed	462
Spray Equipt., Paint	515
Sprayer, Chemical	454
Sprayer, Creosote Tie	454
Sprayers, Tie	462
Sprayer, Weed	488, 490
Spring Washer	IFC, IBC
Steel & Steel Products	427
Surface Grinder	499
Switch Grinder	499
Switch Heaters	497
Switch Stands	427
Tamper	439, 442, 446, 459, 464
Tape, Coal-Tar	516
Tapered Roller Bearings	518
Tie Cutter	454
Tie Drill	456
Tie Grapples	488, 517
Tie Inserter	456, 462
Tie Nipper	499
Tie Plate Spacer	454
Tie Puller	456
Tie Removers	462
Tie Sprayer	454, 462
Tightener, Power Bolt	454
Tool Transporter	454
Track Drill, Power	498
Track Jacks, Aluminum	500, 508
Track Lining Instruments	488
Track Shifter	456
Tractors	431, 445, 455, 503
Tractor, Crawler	445, 503
Tractor, Rubber-Tired	431, 455
Tractor-Shovel	455
Trailers	462
Trench Digger	464
Trimmer, Tie-End	454
Truck Cranes	489, 490
Washer, Spring	LFC, IBC
Weed & Brush Killers	437, 450, 490, 491, BC
Weed & Brush Killing Service	438, 491
Weed Burner	454, 462
Weed Spray Cars	462
Weed Sprayer	488, 490
Welding Service, Rail	440
Wheels	462
Wheels, Cut-Off	499
Wheels, Grinding	499
Wood Preservative	428, 502, 504
Wrenches	456, 489
Yard Cleaner	456

RAILWAY TRACK AND STRUCTURES

May, 1953

Please send me additional product information as requested below.

☐ Literature Only ☐ Desire to see Representative ☐ Price Data

Product and Page No. .....

" " " " .....

" " " " .....

Name .....

Title or Position .....

Company .....

Address ..... City ..... Zone .... State ....

(Please Fill Out Card in Full)

Postage Will be Paid by Addressee

BUSINESS REPLY CARD

First Class Permit No. 33418, Sec. 34.9, P.L.&R. Chicago, Ill.

RAILWAY TRACK AND STRUCTURES

30 Church Street

New York 7, New York

READER SERVICE DEPT.

No Postage Stamp Necessary If Mailed in the United States

the preparation of a history of the Missouri Pacific Lines.

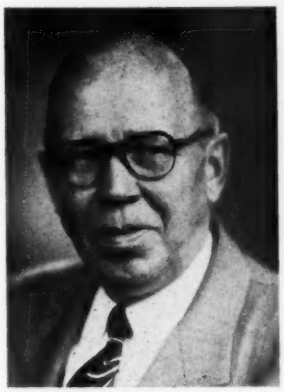
John T. Hoelzer, whose promotion to engineer maintenance of way of the Central region of the Baltimore & Ohio at Pittsburgh, Pa., was recently announced (RT&S, March, p. 308), was born at Akron, Ohio, on September 1, 1900, and was graduated in civil engineering from the University of Akron. He joined the B&O on September 15, 1922, as an assistant on the engineering corps at Akron, and on June 1, 1923, was appointed assistant track supervisor, which position he held, consecutively, at Newton Falls, Lodi, Akron and Ravenna, Ohio. On February 16, 1925, Mr. Hoelzer returned to Akron as assistant on the engineering corps, and subsequently served in that capacity at Washington, Ind., Cincinnati, Ohio, and Garrett, Ind., until September 16, 1937, when he was advanced to supervisor of track at Washington Court House, Ohio. On March 1, 1942, he was appointed assistant division engineer at Cincinnati, and on June 1,

John T. Hoelzer

1946, was promoted to division engineer at Newark, Ohio. On October 1, 1950, he was transferred in the latter capacity to Cincinnati, where he was serving at the time he received his recent promotion.

William Baerthlein, whose promotion to assistant division engineer on the New York Central at Buffalo, N. Y., was recently announced (RT&S, Feb., p. 168), was born at Guttenberg, N. J., on November 15, 1912, and was graduated from North Carolina State College with the degree of B.S. in engineering in June 1938. He began work with the NYC as a laborer on the Eastern division during summer vacation in 1936, and the following summer served as a bridgeman helper. Upon graduation, he entered full-time employment with the railroad, serving consecutively as chainman, rodman and transitman on the Eastern division at New York until March 12, 1942, when he entered military service. Upon his release from that service on April 1, 1946, Mr. Baerthlein returned to the railroad as assistant supervisor of track at Rochester, N. Y., and subsequently served in that capacity at Oneida, N. Y., and Buffalo. On November 1, 1951, he was appointed supervisor of track on the Pennsylvania division at Clearfield, Pa., which position he held at the time he received his recent promotion.

Harold R. Peterson, whose promotion to chief engineer of the Northern Pacific at St. Paul, Minn., was recently announced (RT&S, March, p. 309), was born September 5, 1896, at Minneapolis, Minn. Upon graduation from the University of Minnesota in 1918, he joined the NP as a draftsman in the district engineer's office. From 1920 until 1925 he worked as a draftsman in the bridge department, and in the latter year was named an inspector in the bridge department and served as resident engineer on branch line construction and other special assign-



Harold R. Peterson

ments. In 1928 he was promoted to assistant engineer, and in 1940 was named office engineer at St. Paul. From 1944 until 1946, Mr. Peterson was principal assistant engineer, and in the latter year was promoted to assistant chief engineer—the position he held at the time of his recent promotion to chief engineer.

John B. Mitchell, whose retirement as valuation engineer of the Great Northern at St. Paul, Minn., was recently an-

John B. Mitchell

nounced (RT&S, March, p. 303), was born January 7, 1883, at Zumbrota, Minn. Upon graduation from the University of Minnesota in 1909, he entered railroad service as a rodman with the Chicago, Milwaukee, St. Paul & Pacific. After serving a short time on construction work with the Northern Pacific in 1907, Mr. Mitchell joined the GN in 1910 as a rodman on construction work in North Dakota. He subsequently served as assistant engineer on construction and location and valuation surveys until 1921. He then entered the valuation department and served as assistant and assistant valuation engineer until January 1, 1940, when he was promoted to valuation engineer—the position he held at the time of his retirement.

E. W. Smith, chief clerk to the chief engineer of the Frisco at Springfield, Mo., has been named assistant to the chief engineer.

James T. Sullivan has been appointed assistant division engineer of the Illinois division of the New York Central at Mattoon, Ill., succeeding **W. N. Wilson** who has been transferred.

C. T. Warren, general manager of the Des Moines Union at Des Moines, Iowa, has resigned to accept the position of chief engineer, Saudi Arabian Government Railroads, Dhahran, Arabia.

C. T. Schwalb, assistant engineer on the Atlanta & St. Andrews Bay at Dothan, Ala., has been appointed chief engineer of the Mississippi Export at Moss Point, Miss.

Claude H. Hardwick, division superintendent of the Chicago, Rock Island & Pacific at Des Moines, Iowa, has been appointed district maintenance engineer with headquarters at El Reno, Okla.

J. F. McCook, assistant to the vice-president of the New York Central at Chicago, has been named designing engineer for the Lines West with headquarters at Chicago. Mr. McCook succeeds **H. F. Whitehead,** who has retired after 47 years of railroad service.

Ralph D. Evans, right of way engineer on the New York Central, has been appointed special engineer in the land and tax department with headquarters as before at New York, to succeed **Roy E. Walworth,** who has retired from that position at Albany, N. Y., after more than 37 years of service.

L. H. Hornsby, engineer structures and communications of the Norfolk Southern, has been appointed assistant chief engineer with headquarters as before at Norfolk, Va. **G. P. Page,** principal assistant engineer, has resigned to accept a position with Weir-Kilby Corporation. The positions of engineer structures and communications and principal assistant engineer have been abolished.

R. G. Rayburn, assistant to the division engineer on the Baltimore & Ohio at Cumberland, Md., has been promoted to assistant division engineer at Grafton, W. Va. Mr. Rayburn was born in West Virginia in 1926 and is a graduate of Purdue University. He entered the technical trainee class on the B&O on July 5, 1950, and on its completion was appointed assistant to the division engineer at Cumberland.

(Please turn the page)

Railway Personnel (Cont'd)

Richard G. Brobaugh, whose promotion to division engineer of the Yellowstone division of the Northern Pacific at Glendive, Mont., was recently announced (RT&S, March, p. 309), was born at Willmar, Minn., November 19, 1919. He

Richard G. Brobaugh

graduated from the University of Minnesota in 1941, and in April 1947 entered railroad service with the NP as a rodman in the engineering department at St. Paul, Minn. He served successively as instrumentman and inspector at St. Paul until June 15, 1951, when he was named assistant engineer—the position he held at the time of his recent promotion.

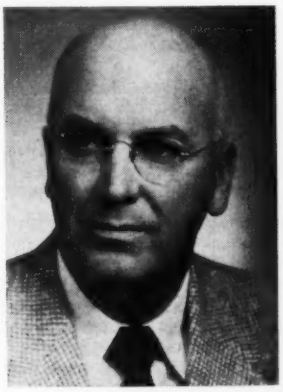
C. Malcolm Bowman, whose promotion to engineer maintenance of way of the Monon at Lafayette, Ind., was recently announced (RT&S, March, p. 308), was born July 16, 1907, at Warsaw, Ind.

C. Malcolm Bowman

Upon graduation from Purdue University in 1930, he served, consecutively, as engineer in the county highway department at Quincy, Ill., in private practice, and in the country engineer's office at Warsaw. He entered railroad service with the Monon in 1940 as a junior engineer, and in 1943 was promoted to office engineer at Lafayette. Mr. Bowman served as assistant engineer from 1945 until 1947, assistant engineer-maintenance from 1947 until 1948, and assistant engineer from 1948 until his recent promotion to engineer maintenance of way.

Clarence M. Gregg, whose promotion to division engineer on the Boston & Albany at Boston, Mass., was recently announced (RT&S, Feb., p. 186), was born at Rynex Corner, N. Y., on December 3, 1897, and was graduated in civil engineering from Union College in 1923. Entering the employ of the New York Central as a draftsman at New York on February 27, 1924, he subsequently served as transitman and rodman at that location and at Watertown, N. Y. On October 1, 1937, he was appointed assistant supervisor of track at Remsen, N. Y., and on March 1, 1941, returned to New York as assistant engineer. On July 1, 1942, Mr. Gregg was appointed supervisor of track at Clearfield, Pa., and on September 1, 1944, was transferred in that capacity to Oneida, N. Y. On January 1, 1946, he was named assistant division engineer at Albany, N. Y., the position he held prior to his recent promotion.

Morris P. Anderson, whose promotion to assistant chief engineer of the Monon at Lafayette, Ind., was recently announced (RT&S, March, p. 308), was born February 8, 1909, at Lafayette and received his higher education from Purdue University. He entered railroad service with the Monon in June 1927 as an extra gang laborer and worked in that capacity and as a rodman during the summers of 1927, 1928 and 1929. He was named junior engineer in the maintenance-of-



Morris P. Anderson

way department in 1930, and in 1938 was promoted to assistant engineer. From 1943 until 1946, Mr. Anderson served in the 726th Railway Operating Battalion, MRS, with the rank of captain, foreign service, in India. In the latter year he returned to the Monon as assistant engineer in the M/W department, and in 1948 was promoted to office engineer at Lafayette—the position he held at the time of his recent promotion to assistant chief engineer.

(*Please turn to page* 498)

3 MEN and a BURRO...

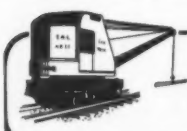
A Real Production Team!

This Burro Crane, its operator and two men on the rail are setting a fast pace for the track gang to follow. Rail gangs equipped with a Burro Crane produce more work per shift at lower cost because Burros have the pace-setting speed and efficiency that helps them keep on schedule. Equally efficient with tongs, magnet, hook, bucket or dragline, Burro Cranes handle any job in stride. Fast travel speeds get them to the job in a hurry . . . heavy draw bar pull permits hauling work train and gang.

Only Burro Cranes Have:

- Fast travel speeds . . . up to 22 MPH
- Draw Bar Pull of 7500 lbs. often eliminates need for work train or locomotive
- Elevated Boom Heels for working over high sided gondolas
- Short tail swing — will not foul adjoining track
- Low overall height — a Burro can be worked and loaded on a standard flat car

Write for Bulletins on Burro Cranes



CULLEN-FRIESTEDT CO.

1320 SOUTH KILBOURN AVENUE • CHICAGO 23, ILLINOIS

THE *Right* SWITCH HEATER FOR YOUR NEEDS

GAS...

RAIL-TEL

Provides complete, economical protection at all times and under all weather conditions—for all types of interlocking plants as well as CTC layouts and isolated switches. RAIL-TEL Switch Heaters are available for both manual or remote control and for use with propane, city or natural gas.

OR ELECTRIC...

ELEC-TIME

For railroads desiring electrical heating units, this modern heater offers important economies. ELEC-TIME'S timing element permits low current consumption and eliminates the necessity for high voltage equipment. The ELEC-TIME is designed for maximum contact surface, uniform heat distribution and low-draw operation.

PLAN NOW FOR NEXT WINTER!

THE RAILS COMPANY

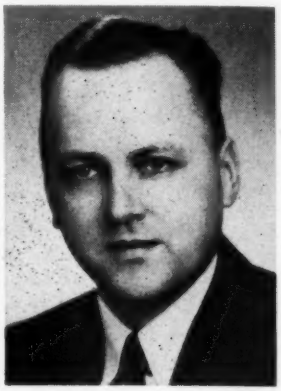
General Office
178 GOFFE STREET, NEW HAVEN 11, CONN.

ST. LOUIS, MO. HOBOKEN, N. J. CHICAGO, ILL.

new!
Save Time—Slash Costs!
Drill true, level holes in seconds with the new, improved
BUDA POWER TRACK DRILL
new! Insulated Support and Locater Group* supports drill between tracks on top of rails. Drilling can be accomplished on all sizes of rail. No wasted time maneuvering drill into position!
Supports are telescopic to 45" length—easily detachable for transporting on motor cars.
new! Longer, two-position hook arms for easy drilling at filler blocks are now available.
new! Welded steel housing on final drive and improved feed screw mechanism add extra strength and longer life!
new! High strength steel spindle.
new! Buda Power Track Drill is the lightest, fastest, safest and most economical drill available. Write for information today.
CHECK THESE FEATURES!
• Low initial cost
• One man drills holes in seconds!
• Light weight—more accurate
• Safety overclutch hook provides quick release to remove drill from rail
• Easy drilling at filler blocks
• Time tested and proven engine
*Support and locater group kit is available for all Buda Track Drills now in service.
BUDA
Serving the Nation's Railroads since 1881
The Buda Company • Harvey, Illinois

Railway Personnel (Cont'd)

Walter R. Bjorklund, whose promotion to district engineer of the Northern Pacific at St. Paul, Minn., was recently announced (RT&S, March, p. 309), was born August 29, 1912, at Seattle, Wash. Upon graduation from the University of Washington in 1934, he entered the service



Walter R. Bjorklund

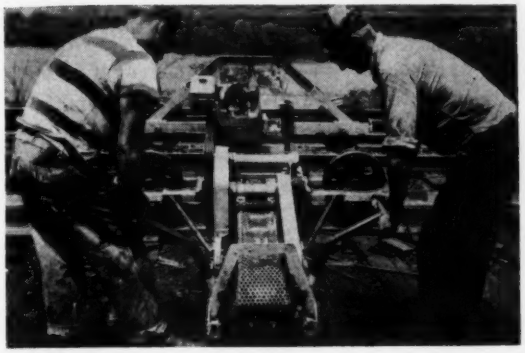
of the NP as a chainman at Tacoma, Wash. He served in various locations as rodman and instrumentman until 1940 when he was promoted to inspector in the district engineer's office at St. Paul. He was appointed structural draftsman in the bridge department in February 1942. In May of the same year he was appointed assistant engineer on construction work in Idaho, and in June 1942 was named assistant engineer of track at St. Paul. In December 1943 he was promoted to division engineer at Glendive, Mont., and in March 1947 was named assistant district engineer at Billings, Mont. From March 1949 until January 1951, Mr. Bjorklund served as office engineer in the chief engineer's office at St. Paul, and on the latter date was promoted to principal assistant engineer—the position he held at the time of his recent promotion to district engineer.

James A. Pollard, who has been appointed assistant to engineer maintenance of way on the Delaware, Lackawanna & Western at Hoboken (RT&S, March, p. 304), began his railroad career with the Central of New Jersey, where he remained six years. He entered the service of the Lackawanna on April 16, 1932, with the roadway department at Hoboken. He was appointed supervisor of track in April 1942, and was advanced to roadmaster at Hoboken on June 1, 1949, in which capacity he was serving when he received his promotion on February 1.

J. S. Findley has resumed his former position as division engineer on the Chicago, Burlington & Quincy with headquarters at Denver, Colo., upon completion of a special assignment as engineer of construction on relocation and construction of new lines on the McCook and Wymore divisions made necessary by construction work of the Bureau of Reclamation.

(*Please turn to page* 500)

A **BETTER** *way to CLEAN CRIBS . . .*



NEW RTW P-46 BALLAST EXTRUDER

For lowering ballast in cribs before adzing ties, this new RTW machine embodies design and operating features that help speed rail replacement jobs and keep down costs. Rugged teeth mounted on an engine-driven endless chain speedily remove ballast to intertrack spaces or to shoulders without damaging ties. Cribs are cleaned to a uniform level, thus avoiding formation of water pockets.

Simple, compact design makes the RTW P-46 Ballast Extruder easy to move along track to and from location. A counterbalancing feature minimizes effort required by operator to raise and lower operating head while machine is in use.

Be sure to call or write immediately for full description and prices on this time- and cost-saving unit.

Railway Trackwork Co.

3207 KENSINGTON AVE., PHILADELPHIA 34, PA.

TRACK MAINTENANCE MACHINERY

Rail Grinders
Switch Grinders
Cross Grinders
Surface Grinders
Rail Drills
Ballast Extruders
Bit Sharpeners
Tie Nippers
Grinding Wheels
Cut-off Wheels

Announcing...

VG4D Standard Engine with side-mount fuel tank.

a Bigger Better WISCONSIN ENGINE

The NEW Model VG4D 25 to 36 H. P.

HEAVY-DUTY *Air-Cooled*

16% More Power For Your Equipment

Another engineering achievement . . . the NEW Model VG4D V-type 4-cylinder Wisconsin Heavy-Duty Air-Cooled Engine, increasing the power range to 36 hp. — a power gain of more than 16% over the VP4D, former top engine in the line.

The NEW Model VG4D is an exceptionally smooth-running, even-firing engine. Its light weight and compactness in design simplify the problem of engine installation on modern equipment where weight and space limitations are important factors.

Every one of the traditional Wisconsin 4-cylinder features are built into this new model. These include, to name a few, tapered roller main bearings, dynamically balanced, heat treated, drop forged crankshaft, mirror finish on crank pins, Stellite-faced exhaust valves and valve seat inserts and honed cylinders for long, dependable, heavy-duty engine life.

The Model VG4D engine delivers a maximum of power per pound of engine weight, at minimum operating and maintenance costs. Can be equipped to operate on kerosene, fuel oil or natural gas.

MORE Power TO FIT THE JOB

MORE Power TO FIT THE MACHINE

We invite your request for complete detailed specifications.

WISCONSIN MOTOR CORPORATION

World's Largest Builders of Heavy-Duty Air-Cooled Engines

MILWAUKEE 46, WISCONSIN, U. S. A.

Cable Address: WISMOTORCO

A 7253-½-EX

Why section gangs work faster with these two aluminum track jacks

Ask Tony or Joe or any of the boys who worked with either of these Duff-Norton aluminum track jacks, and you'll get the same story. They like them because they're 25% and 33⅓% lighter than jacks with malleable iron housings. Being lighter in weight they are easier to carry and spot. With less energy expended in handling unnecessary dead weight, the gang is able to do more work.

Write the world's oldest and largest manufacturers of lifting jacks for TRACK JACK Bulletin AD18-F, The Duff-Norton Manufacturing Co., P. O. Box 1889, Pittsburgh 30, Pa. Canadian plant —Toronto 6, Ontario.

1. No. 517BA Single Acting Surfacing Jack can raise 15 tons 5 inches, weighs only 31 lbs.
2. No. 117A Single Acting Track Jack can raise 15 tons 13 inches, weighs only 46 lbs.

DUFF-NORTON *Jacks*

"Giving Industry A Lift Since 1883"

Railway Personnel (Cont'd)

Carlton F. Olson, whose promotion to valuation engineer on the Great Northern at St. Paul, Minn., was recently announced (RT&S, March, p. 303), was born March 8, 1911, at Brandon, Minn. He graduated from the University of Min-

Carlton F. Olson

nesota in 1934 and on March 10, 1942, entered the service of the GN as assistant engineer in the valuation department at St. Paul. On July 20, 1948, Mr. Olson was promoted to assistant valuation engineer —the position he held prior to his recent promotion.

Melvin W. Bruns, whose appointment as bridge engineer for the Terminal Railroad Association of St. Louis was recently announced (RT&S, March, p. 302), was born July 20, 1901, at St. Charles, Mo. Upon graduation from the University of Illinois in 1923, he entered the service of the Illinois Central as a draftsman. In June 1925 he became assistant engineer on the Missouri Pacific—the position he held prior to his recent appointment.

Arthur B. Lewis, who was recently appointed assistant engineer in the office of the chief engineer maintenance of way of the Central region of the Pennsylvania at Pittsburgh, Pa. (RT&S, March, p. 308), was born at Hazleton, Pa., on June 2, 1907, and was graduated in civil engineering from Princeton University in 1929. Immediately following graduation, he entered the service of the PRR as a rodman at Newark, N. J., and thereafter served as assistant on engineer corps, assistant supervisor of track, and supervisor of track until June 1941, when he was assigned to special duty in the office of the vice-president of operations at Philadelphia, Pa. In April 1943 he was named supervisor of track at Steubenville, Ohio—the position he held at the time of his recent appointment.

John V. Middleton, who was recently promoted to division engineer on the New York Central at Jersey Shore, Pa. (RT&S, March, p. 304), was born at Bedford, Pa., on October 20, 1904, and was graduated in civil engineering from Pennsylvania State College in 1927. Entering the employ of the NYC in September

(*Continued on page* 502)

Speed up Rail Maintenance

with off-track work equipment

Normal train operations, even on heavily congested lines, need not be delayed by track maintenance equipment. Clearing away land and rock slides, cleaning drainage ditches, restoring embankments, widening and re-aligning right-of-ways . . . all these and many other jobs can be speedily and efficiently handled by a crawler-mounted Bucyrus-Erie dragline without interference to or from traffic. Here's why:

Complete Mobility — You're working off the tracks, not interfering with traffic flow. Positive steering control permits making sharp or gradual turns. You can climb stiff grades, get around easily in cramped working quarters.

Outstanding Cycle Speeds — Exceptional synchronization of speeds and power results in well balanced work cycle, speedy job completion. Each swift, powerful pass is followed through with high-speed swing and quick, accurate dump.

Easy Operation — Power, speed and flexibility are put into the control levers. Operator can "step on it" because he always has full feel of his machine through direct-connected mechanical controls.

Long-Range Booms — Your operator can dig and dump at varying distances from the tracks. Butt splices make it easy to insert or exchange extra boom sections to fit boom lengths to individual job requirements.

Bucyrus-Erie draglines are easily converted in the field to shovel, crane, clamshell or dragshovel front end. Why not lay plans now for a Bucyrus-Erie on your division? Seven models to choose from — capacity ⅜- to 4-cu. yds. 65E53

BUCYRUS-ERIE COMPANY SOUTH MILWAUKEE, WISCONSIN

Mall

"best of all"

POWER TOOLS for every department of railroad maintenance and operation

One MALL power unit, with flexible shaft, drives many different types of track maintenance attachments—grinders, rail drills, and rail slotters. You get SPEED and ECONOMY.

You can't beat MALL chain saws (gasoline, electric, or pneumatic) for sawing heavy lumber in the shop, for land clearing, tie cutting, and bridge building. There's a model for every need.

MALL portable tools are world famous for quality and dependability. You'll find a wide range of MALLDRILLS and MALLSAWS, plus a big capacity Impact Wrench... to get work done faster and better.

40 Factory-Owned Service Warehouses, Coast to Coast, To Serve Our Customers Quickly and Capably.

GET MORE INFORMATION NOW! RU-9

Send me additional information about MALL
☐ Flexible Shaft Machines ☐ Chain Saws
☐ Portable Tools

Name_____

Railroad Dept._____

Company_____

Address_____

MALL TOOL COMPANY

7738 S. Chicago Ave. Chicago 19, Illinois

Railway Personnel (Cont'd)

1927 as a chainman at Utica, N. Y., he subsequently served as a rodman, draftsman, assistant supervisor of track, assistant engineer, and supervisor of track. In August 1946 he was advanced to assistant division engineer at Watertown, being transferred, in November 1950, to a similar position at Syracuse, where he continued until his recent promotion.

J. T. Collinson, whose promotion to division engineer on the Baltimore & Ohio at Newark, Ohio, was recently announced (RT&S, March, p. 308), was born in 1926 and was graduated from Cornell University in 1946. He entered the service of the B&O in October of the latter year on the engineering corps at Pittsburgh, Pa. On October 1, 1947 he was assigned to the office of the chief engineer maintenance as an inspector. In 1950 he was made assistant division engineer at Newark—the position he held at the time of his recent promotion.

James W. Bolstad, whose promotion to assistant district engineer of the Northern Pacific at St. Paul, Minn., was recently announced (RT&S, March, p. 309), was born March 10, 1918, at Sioux City, Iowa. Upon graduation from the University of Wisconsin in 1940, he entered the service of the NP as a chainman at Missoula, Mont. After serving as rodman and instrumentman and spending 3½ years in the armed forces, Mr. Bolstad returned to the NP and was named assistant engineer at St. Paul in February 1951. He was promoted to division engineer at Glendive, Mont., in June 1951, and to assistant district engineer in March of this year.

D. H. Shoemaker, whose promotion to assistant chief engineer of the Northern Pacific was recently announced (RT&S, March, p. 309), was born June 18, 1905, at Bushnell, S. D. He graduated from the University of Minnesota and entered railroad service with the NP in 1929. He served as assistant engineer, as assistant engineer in charge of construction of the Bozeman tunnel in Montana, and as assistant engineer on the New Salem (N. D.) line change. He was promoted to office engineer in 1946 and in 1949 was made principal assistant engineer. Later Mr. Shoemaker was promoted to district engineer at St. Paul, Minn.—the position he held at the time of his recent promotion.

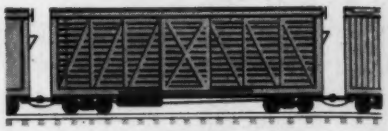
Track

Fred R. Hoke, student apprentice on the Southern, has been promoted to assistant supervisor of track with headquarters as before at Greensboro, N. C. **James H. Morgan, Jr.,** has been appointed assistant supervisor of track at Winston-Salem, N. C., and **Elmore E. Bailey** has been appointed assistant supervisor of track at Mooresville, N. C.

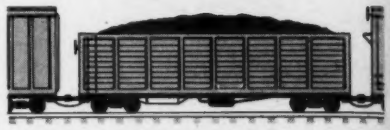
J. P. McIntyre, supervisor of track, special duty, office of comptroller, of the Pennsylvania at Philadelphia, Pa., has been appointed supervisor of track on the Philadelphia Terminal division at Read-

(*Continued on page* 504)

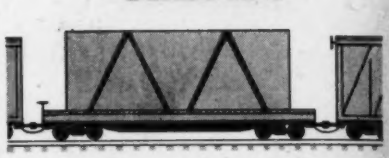
PENTA



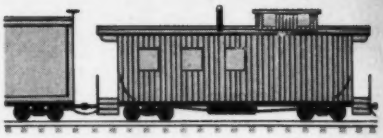
GIVES



CLEAN



PROTECTION



for car lumber and all wood construction

A sure way to multiply the life of wood many times over . . . to hold down maintenance expenses . . . to stop decay and termites . . . is to specify pressure treatment of wood with PENTA. PENTAchlorophenol is clean and paintable, doesn't evaporate or wash away, is always the same. Yet it costs no more than other types of wood preservatives. Ideal for car lumber, poles, crossarms, and all other wood construction. Write today for complete facts and names of companies supplying PENTA-treated forest products.

CHAPMAN CHEMICAL COMPANY

Dermon Building, Memphis 3, Tenn.

CHAPMAN®

Penta Preservative

Conforming to A.W.P.A. Specification P8 and P9

WE say the Allis-Chalmers HD-20 is

Designed to Outproduce

Built to Outlast

but anyone can make claims . . . . . That's why we invite you to get the facts firsthand from HD-20 owners. Just call your nearby Allis-Chalmers dealer. He'll be glad to tell you where you can see these great tractors at work . . . where you can talk to those who own and operate them. When you do, experience tells us you'll hear about these big benefits:

Hydraulic torque converter drive gives the operator the equivalent of hundreds of gear ratios in two speed ranges — automatically selects the proper speed for maximum production. With hydraulic torque converter drive, you take full advantage of available horsepower . . . even at creeping speed. And cushioned protection means fewer repairs . . . longer life of tractor and auxiliary equipment.

In any pushing or pulling work, there's nothing like the HD-20 for sheer productive power. Torque converter actually multiplies torque up to four and one-half times . . . develops tremendous drawbar pull to start the load smoothly, and automatically accelerates to highest speed conditions permit, in either high or low range.

New design. The HD-20 is built to take it — with such design advantages as all-steel welded construction . . . balanced weight and power . . . extra heavy main frame. Hydraulic control permits steering this 20-ton giant with only the touch of a finger.

Easy to service, easy to maintain. 1,000-hour lubrication intervals for truck wheels, idlers, support rollers; no lubrication fittings under tractor. Major units are easily removed without disturbing adjacent parts; adjustments are simple.

See for yourself the many profit-making applications of the HD-20. Ask your Allis-Chalmers dealer to show you this outstanding tractor at work.

41,000 POUNDS

175 NET ENGINE HORSEPOWER

GM 2-CYCLE DIESEL ENGINE

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, WIS.

Railway Personnel (Cont'd)

ing, Pa., to succeed **W. B. Super,** who has been transferred to Philadelphia to replace Mr. McIntyre. **G. E. Hartsoe** has been appointed assistant supervisor of track on the Philadelphia division at Harrisburg, Pa., upon his return from military service.

A. C. Gustafson, track supervisor on the Chesapeake & Ohio (Pere Marquette district) at Benton Harbor, Mich., retired recently after 50 years of service. **Harvey Stark,** track foreman, has been promoted to assistant track supervisor on the Grand Rapids division at Grand Rapids, Mich., succeeding **John Smith,** who has been promoted to track supervisor at Muskegon, Mich. Mr. Smith succeeds **A. J. Aquino,** who has been transferred to Benton Harbor to succeed Mr. Gustafson.

Mr. Gustafson entered the service of the Pere Marquette as a section laborer at White Cloud, Mich., on June 1, 1903. He was promoted to track foreman on August 15, 1909, and on November 10, 1920, was named track supervisor of the Petoskey division at White Cloud. He was transferred to the Chicago division with headquarters at Benton Harbor in 1941—the position he held until his retirement.

Harold E. Richards, whose promotion to supervisor of track on the Pennsylvania at Ashtabula, Ohio, was recently announced (RT&S, March, p. 311), was born at Huntingdon, Pa., on December 10, 1926, and was graduated in civil engineering from Pennsylvania State College on June 7, 1948. Entering the employ of the PRR on July 1, 1948, as a junior engineer, track, Mr. Richards was promoted to assistant supervisor of track, branch line, with headquarters at York, Pa., on August 16, 1950. On February 1 of the following year he was transferred to the main line at Harrisburg, Pa., where he was located at the time of his recent promotion.

T. R. Summers has been appointed assistant roadmaster on the First district of the Santa Fe and **Eugene Staats,** roadmaster working with Tournapull equipment, has been transferred to the Illinois division at Chillicothe, Ill.

Roy P. Taylor, Jr., whose promotion to supervisor of track on the Southern at Mooresville, N. C., was announced recently (RT&S, Mar., p. 311), was born at Westminster, S. C., on March 12, 1921, and received his B.S. degree in civil engineering from Clemson College in June 1950. Following graduation, he entered the employ of the Southern as a rodman at Charlotte, N. C., where he subsequently served as student apprentice. In January 1951 he was appointed assistant supervisor of track at Greenville, S. C., the position he held prior to his recent promotion.

Michael A. Dolcie, whose promotion to supervisor of track on the New York Central at Dunkirk, N. Y., was recently announced (RT&S, Mar., p. 310), was born at Dunkirk on October 20, 1910, and entered the employ of the NYC as a track laborer at Van Buren, N. Y., on May 5, 1929. He subsequently served as assistant foreman and foreman, maintenance of way, at Dunkirk until September 1, 1944, when he was advanced to assistant supervisor of track at that location. On July 1, 1952, he was appointed acting supervisor of track at Dunkirk—the position he held prior to his recent promotion.

L. E. Grogan, whose promotion to supervisor of track on the New York Central at Brewster, N. Y., was recently announced (RT&S, Mar., p. 310), was born at Philmont, N. Y., on September 4, 1905. He entered the employ of the NYC on June 28, 1920, as a track laborer at Philmont, and served, successively as an assistant foreman at Golden's Bridge, N. Y., section foreman at Yorktown Heights, and work train foreman at Brewster. Appointed assistant supervisor of track in March 1945, Mr. Grogan held that position consecutively at Lyons, N. Y., Corning, and Brewster, until February 1, last, when he received his recent promotion.

Water Service

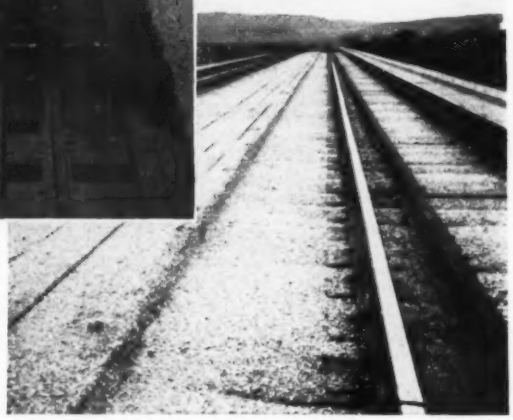
Elton M. Kendall, whose promotion to water service and heating engineer on the Santa Fe at Amarillo, Tex. was recently announced (RT&S, March, p. 312), was born June 30, 1908, at Odell, Tex.

(*Continued on page* 506)

IT COSTS *LESS*

to protect bridge ties than to replace them . . .

The photo to the left shows the ease with which the Libbey-ZONE Process permits application to any wood surface. Application is made by spray or brush. No skilled labor needed.



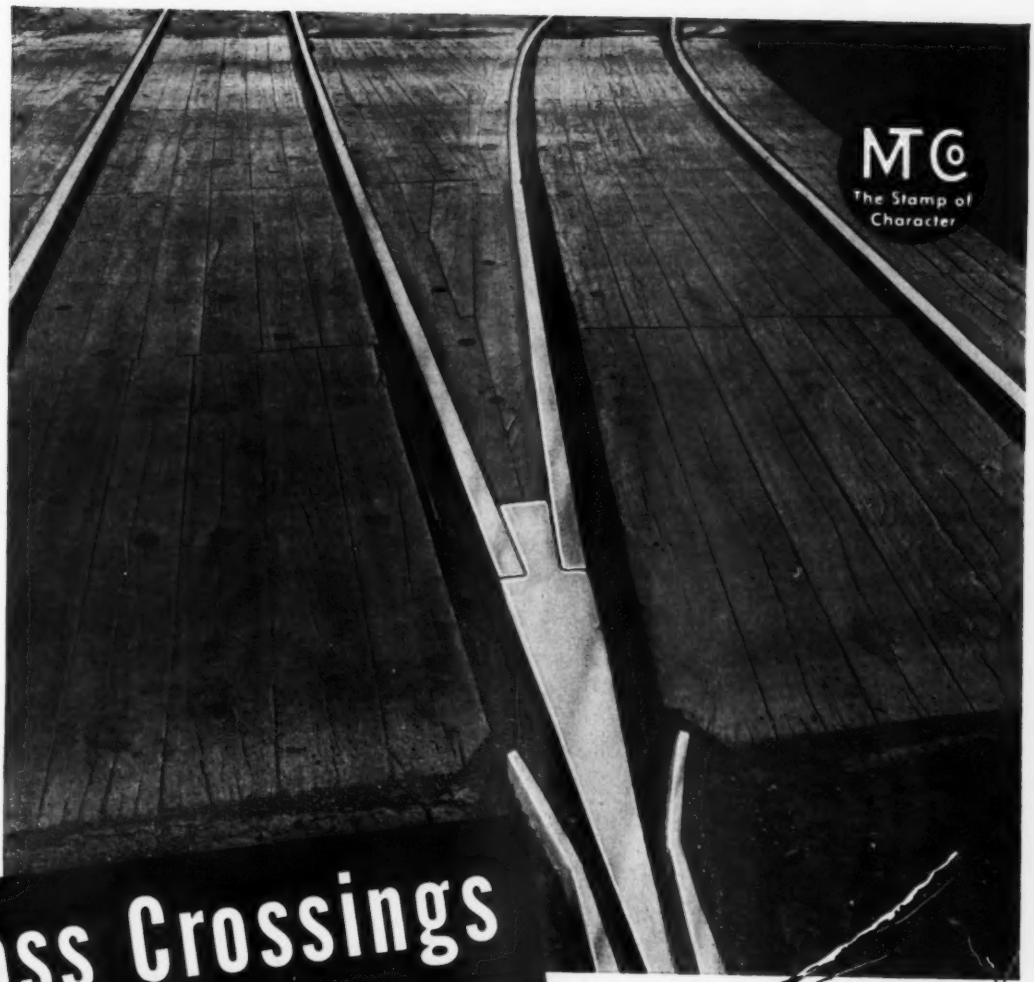
The right photo shows a completed Libbey-ZONE application to a typical wood trestle. The white surface is simple, inexpensive gravel aggregate held in place by the Libbey-ZONE coating. Practically fireproof.

Libbey-ZONE Process Reduces Tie Deterioration and Bridge Fire Hazard

You won't deny that replacing weather-worn bridge ties is costly and difficult. Libbey-ZONE process-treated bridge and trestle ties remain in service years longer than untreated ties . . . in fact, almost indefinitely. The carefully compounded asphalt-asbestos Libbey-ZONE coating is applied easily by unskilled hands . . . and immediately seals cracks, crevices and provides a weather-proof coating for the wood surface. To this is added a gravel aggregate that time-proved tests prove highly resistant to fires caused by live coals, fuzees, oil sparks, etc. For your vertical wood bridge supports, The ZONE Co. has developed new ZONE FIREPLATE . . . assuring remarkable resistance to damage from grass or prairie fires. The Libbey-ZONE Process is your road's surest and lowest cost insurance against bridge tie deterioration and the ever present fire hazard to untreated wood surfaces. We invite your inquiry . . . the facts and the proof are yours without obligation.

THE ZONE COMPANY

Rail Products Division • Box 789 • Fort Worth 1, Texas



Moss Crossings

win you handshakes . . . *rather than headaches!*

- Smooth, tightly-locked surface wins public applause.
- Interlocking grain of black gum, toughest of hardwoods, ruggedly resists battering wear and tear.
- Maintenance cut to a minimum through longer service, less patching and track tie-up.
- Highest quality pressure-creosoted timbers render exceptionally long life, safe service.
- Bolt-locked panel construction, quick and economical to install and easy to remove for track work.
- Tailored to fit any angle or curve.

Specify Moss Crossings of Pressure-Creosoted Black Gum. They stand the test of time.

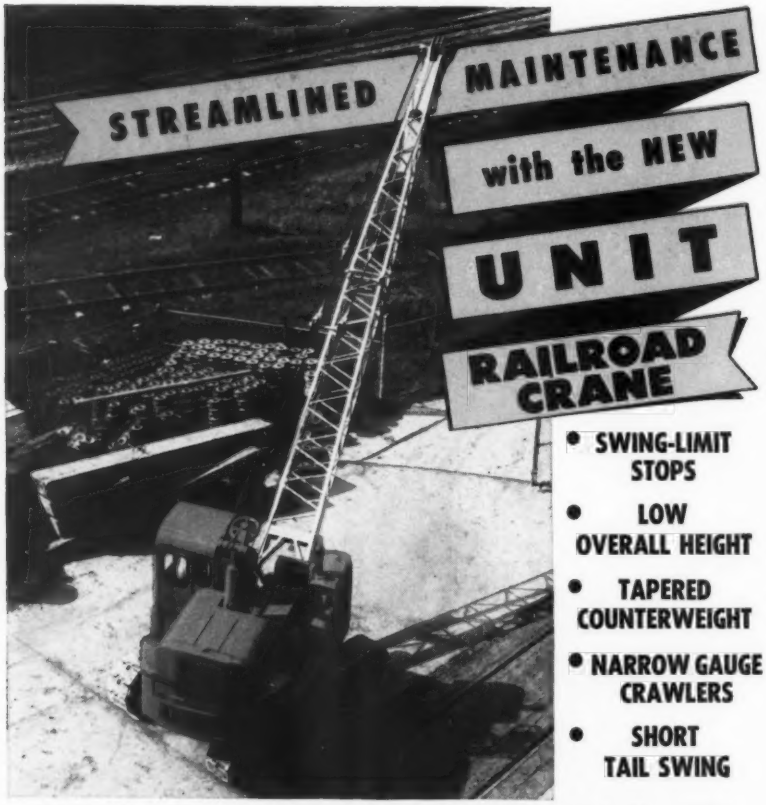
MTC The Stamp of Character

T. J. MOSS TIE COMPANY

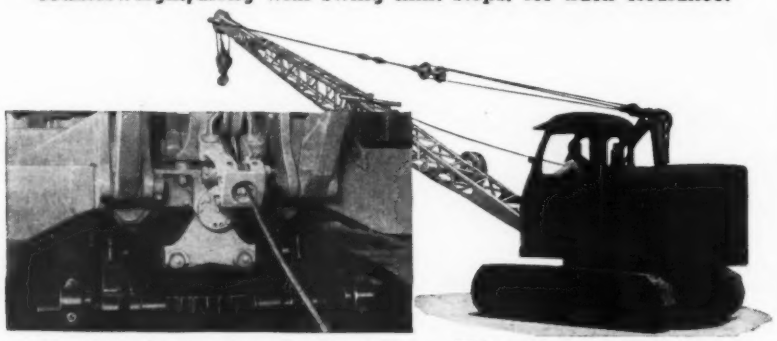
700 SECURITY BUILDING • ST. LOUIS 2, MISSOURI

CROSS TIES • SWITCH TIES • POLES AND POSTS • PILINGS • CROSSINGS

WOOD PRESERVING PLANTS: E. St. Louis, Ill.—Granville, Wis.—Shreveport, La.—Columbus, Miss.



Many of the features found in the UNIT 1020R were built around the ideas and suggestions of railroad engineering specialists. Its modern design assures fast, easy control, both in crane and excavator operation . . . on the line, or off-the-track. A low overall height allows for underpass clearance. Narrow gauge crawlers permit unloading in, and moving through, gondolas. A tapered counterweight, along with swing limit stops, for track clearance.



Swing-Limit Stops act as automatic guides where space does not permit a full swing. Eight cushioned stops offer a selection of working ranges within safe operating limits. Prevents fouling the adjoining track, or striking obstacles when working in confined quarters.

With a reputation for high production and economical operation, the UNIT 1020R is a machine you'll want to know more about . . . Write for complete details regarding specifications and working ranges.

UNIT CRANE & SHOVEL CORP. 6403 W. Burnham St., Milwaukee 14, Wis., U.S.A.

SHOVELS • DRAGLINES • CLAMSHELLS
CRANES • TRENCHOES • MAGNETS

Railway Personnel (Cont'd)

He entered the service of the Santa Fe as a water service laborer on the Western lines on November 16, 1927, and on June 1 of the following year was named water service helper. He was promoted to water service mechanic on June 1, 1936. On December 1, 1942, Mr. Kendall was named water service construction foreman at Amarillo—the position he held at the time of his recent promotion.

Bridge and Building

A. O. Lagerstrom, assistant superintendent of buildings on the Chicago, Milwaukee, St. Paul & Pacific at Chicago, retired recently.

E. J. Eisenhuth, resident material inspector, test department, Altoona works of the Pennsylvania, has been appointed scale inspector, office of chief engineer maintenance of way of the Central region.

Special

C. E. Morgan, superintendent work equipment and welding of the Chicago, Milwaukee, St. Paul and Pacific, has been appointed superintendent of track welding, with headquarters as before at Chicago. **H. C. Poppsmith,** master mechanic at La Crosse, Wis., has been appointed superintendent of work equipment, with headquarters at Chicago.

L. E. Mitchell, whose appointment as special projects engineer for the Canadian National with headquarters at Montreal was recently announced (RT&S, Feb., p. 166), is a native of Campobello, N. B. He received his B.A. degree and engineering certificate from Mount Allison University, and his B.S. degree in mechanical engineering from Nova Scotia Technical College, graduating from the latter in 1932. Previous to entering the service of the CNR, Mr. Mitchell had been employed in the engineering division of Imperial Oil Limited. Joining the company at its Halifax refinery in 1932, he was engaged on construction and maintenance work for the company in Peru and Colombia, South America, between 1935 and 1941. He returned to the Halifax refinery in 1941 and was transferred to Sarnia, Ont., in 1951, where he was serving at the time he received his recent appointment.

Obituary

John D. Sullivan, roadmaster on the Chicago & North Western, with headquarters at Chicago, died on April 22.

Chester B. Collier, retired supervisor of bridges and buildings on the New York Central at Springfield, Ohio, died recently at the age of 72. **M. H. LaRoche,** retired supervisor of track at Utica, N. Y., died recently at the age of 63, and **William E. Davin,** retired roadmaster on the Pittsburgh & Lake Erie at McKees Rocks, Pa., died recently at the age of 78.

(*Please turn to page* 509)

RUST-OLEUM

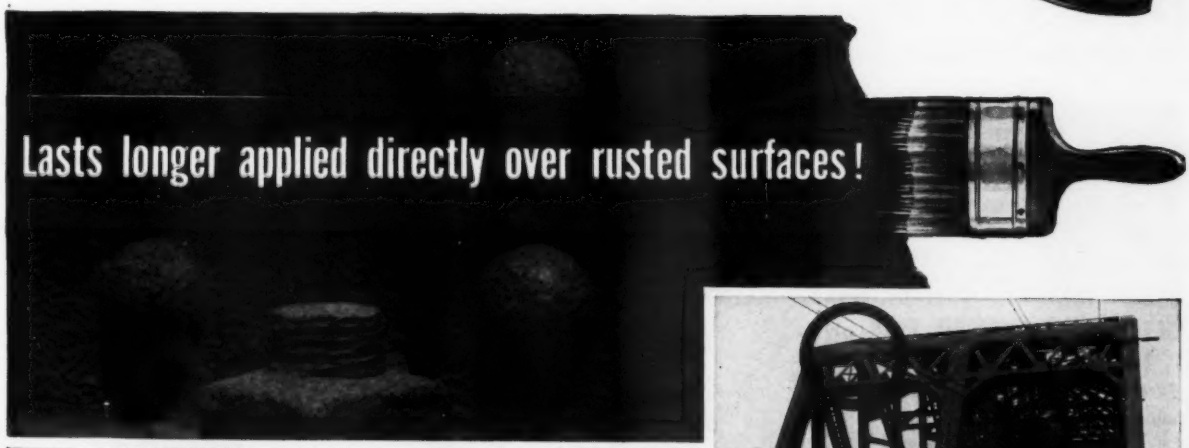
STOPS RUST!

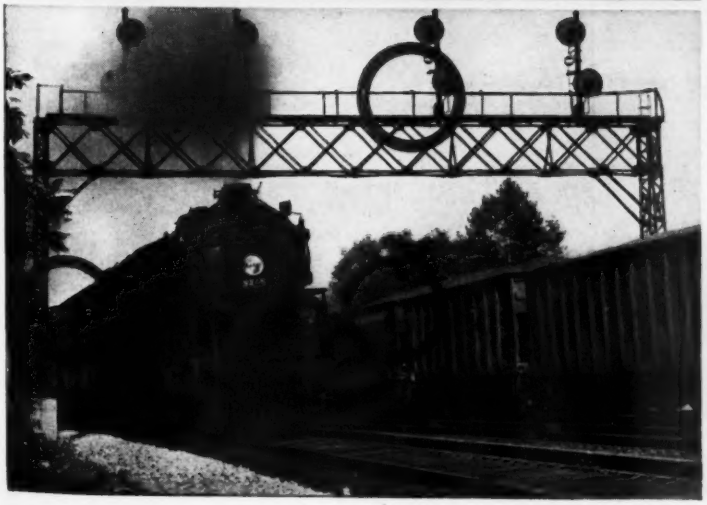
Cut Your Maintenance Costs On Signalling Equipment, Rolling Stock, Bridges, Towers, Tanks, etc.

Here's the *practical, sensible* answer to your rust problems! Costly sandblasting or chemical precleaning are not usually required . . . just wirebrush and scrape to remove rust scale and loose particles . . . then apply RUST-OLEUM by brush, dip, or spray over the rusted surface. Dries to a tough, elastic, rust-resisting film that lasts longer applied over rusted areas. So easy to use that one man often does the work of two . . . saves you time, labor, and money. Get the complete story from your RUST-OLEUM Rust Preventive Railroad Specialist today!

RUST-OLEUM CORPORATION
2549 Oakton Street, Evanston, Ill.

Available In All Colors, Aluminum and White.



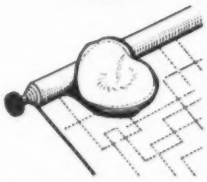


Request Your FREE Copy of The RUST-OLEUM Railroad Catalog Now!

KRAFTBILT *lifetime* MAP CABINETS

Hold more take less space

One Kraftbilt Vertical Rollfile holds 96 rolled maps. One unit of a Kraftbilt Horizontal Rollfile holds 112 rolled maps! Made specially for all types of rolled charts and plans, tracings, blue prints, maps, drawings. Of all-steel, fire-resistant construction. Disappearing doors and drawers mounted on ball-bearings. Kraftbilt cabinets lock out dust, moisture, insects. Send for Bulletin 352-B for details.

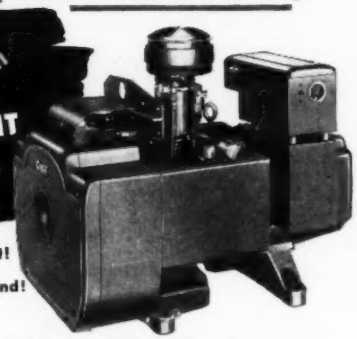


Kraftbilt all-plastic snap-on Map Sticks take the work out of map handling. They are quicker, lighter, stronger. And Kraftbilt Map Weights act as extra hands in eliminating the use of thumb tacks. Just toss 'em on!

Ross-Martin Company
BOX 800-P • TULSA 1, OKLA.

Take a good look at this New Powerhouse*!

THE ONAN "CW" *ELECTRIC PLANT
5,000 or 10,000 watts



LOWEST COST per kilowatt!
HIGHEST OUTPUT per pound!
MOST COMPACT!

For standby, portable, mobile, stationary use

Whatever your need for electric power, the new Onan CW—5 and 10 give you top performance and value! Here, for the first time, are 5 and 10KW electric plants powered by revolutionary, new air-cooled gasoline engines, *designed and built by Onan exclusively for electric plant use.*

Both engines are 1800 R.P.M. Weigh much less than general-purpose engines. Amazingly compact. Two-cylinder, alternate-firing for smooth power. Built to deliver dependable service in heavy-duty use. New, quiet, highly-efficient vacuum air cooling drives out all heated air through *one* side vent, simplifying installation. Impulse-coupled, high-tension magneto ignition for quick starting under all conditions. Standard voltages 60-cycle A.C.

Write for folder and specifications

Onan ELECTRIC PLANTS
D. W. ONAN & SONS INC.
4589 UNIVERSITY AVE. S. E., MINNEAPOLIS 14, MINN.

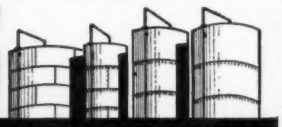
SET FIRMLY—STAND STRAIGHT
FOR THE *"BIG LIFT"* IN
Track Jacking

For track maintenance, including surfacing, lining, tamping-ballasting, tie plate renewal, and in conjunction with welded rail, you'll find—among other features—that Simplex Aluminum Alloy Track Jacks set more firmly and stand straighter. The large 2½" x 3¼" forged (not a welded plate), machined toe gives the "big lift" easily under rail or under ties without damage. Sturdy, lightweight, Aluminum Alloy housings are reinforced at all stress points. Greater bearing area of rack bar on housing gibs reduces wear. Simplex Jacks lift full capacity on toe or cap.

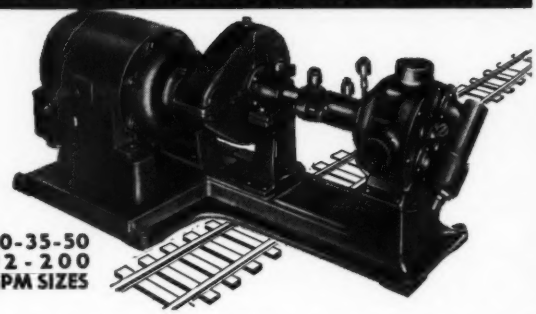
SIMPLEX 16A
Full 6" lift—highest of any surfacing jack. Minimum toe height 1½". Eliminates ballast removal; less digging in under-tie work. Trips from right or left. Improved safety thumb guard.
Capacity 15 tons; weighs only 28 lbs.
SIMPLEX A5
Capacity 15 tons; weighs only 28 lbs. 5" lift.
SIMPLEX A17
Capacity 15 tons; weighs only 41½ lbs. 13" lift.

Simplex LEVER • SCREW • HYDRAULIC Jacks
Write for Bulletin: Track 49
1026 South Central Avenue • TEMPLETON, KENLY & CO. • Chicago 44, Illinois

VIKING



FULFILLS THE NEED FOR A COMPLETE LINE OF TOTALLY ENCLOSED, OUT-DOOR, SINGLE PUMPING UNITS



20-35-50
92-200
GPM SIZES

For fast, clean, loading and unloading of petroleum products and other liquids up to 11,000 S.S.U. Ideal for installing out of doors without protection of any kind.
Reduce your pumping time with these big, rugged units. Built to take it

OUTSTANDING FEATURES:

1. A complete range of sizes. See capacities listed above.
2. New, oil-tight, cast iron gear case. No leakage.
3. Radial bearing for pump shaft on 200 gpm size. Bronze bushed bearing for smaller sizes.
4. Stainless steel pump shaft. No rusting.
5. Viking valve on pump head. (Optional.)
6. Extra long stuffing box on pump. Leak resistant.
7. Speed and capacity range available for each size pump.
8. Five ball check grease cups. (Other style grease fittings optional.)

For complete information, send for free bulletin SP-223CEE today

See Our Catalog in SWEETS
Viking PUMP COMPANY
Cedar Falls, Iowa

Railway Personnel (Cont'd)

William C. Swarthout, retired assistant engineer on the Missouri Pacific at St. Louis, Mo., died recently.

Joseph W. Jones, senior assistant engineer on the Baltimore & Ohio at Baltimore, Md., died recently after 36 years of service. Mr. Jones entered the service of the B&O in 1917 and worked continuously in the engineering department until his death. On March 1, 1946, he was appointed regional engineer of the Eastern region at Baltimore, and on February 1, 1952, was named senior assistant engineer —the position he held at the time of his death.

Association News

Mississippi Valley Maintenance of Way Club

The next meeting of the club, the last of the season, will be held on May 11 in the Hotel De Soto, St. Louis, with dinner scheduled for 6:30 p.m. The program will consist of an address by G. M. Magee, director of engineering research, Engineering Division, Association of American Railroads, whose subject will be "Research for Longer Tie Life." This will be the first annual meeting of the new organization, and officers to serve during the ensuing year will be elected.

The last meeting was held on April 13, with an attendance of 192 members and guests. Col. J. W. Wheeler, executive assistant, Chicago, Burlington & Quincy, was the principal speaker. The title of his address was "Railroad Construction with Emphasis on Reducing Maintenance Cost," and was based on policies followed in the construction of the Burlington's recently completed 71-mile cut-off on its line between Kansas City and Chicago. Another feature of the program was the showing of a motion picture, "The Labrador Railroad," depicting scenes in the construction of the Quebec, North Shore & Labrador. The film was produced by Armco Drainage & Metal Products, Inc., and during the showing of its supplementary remarks were made by W. W. Mains, vice president of Armco.

As of the April meeting, the membership of this club totaled 505, and it was anticipated that the total would reach 525 by the May meeting.

American Railway Engineering Association

The Committee on Track will hold a two-day meeting beginning with a meeting in the Illinois Room of the Palmer House, Chicago, on May 19. On the 20th, the committee will make an inspection of track tests on the Illinois Central between Monee and Kankakee, Ill., returning to Chicago the evening of that day.

(Please turn the page)

EVERY YOUNG MAN...

with a serious interest in the railroad business ought to read Railway Age. He owes it to his own best interests to get Railway Age at home each week. This way a few minutes reading will keep him informed as to what's going on in the industry, what's new, how someone else is solving problems common to his railroad and his own job.

Railway Age has a 27-man editorial staff — including full time editors at Washington — to do the bulk reading for busy Railway Age subscribers, culling, screening and condensing all the information of national importance to the industry.

Our records show that many of the top railway men today subscribed to Railway Age at their homes when they were in supervisory positions — and that they continue their home subscriptions in force today.

Let Railway Age supplement the how-to-do-it information of *Railway Track & Structures* with the why's and wherefore's of all-around railway developments. Enter your subscription order *today!*

Railway Age
30 Church St.
New York 7, N. Y.

Please send Railway Age to me at

..... , ...
Street Address City

..... , ... , for one year ($4) ..... , or two years
Zone State

($6) ..... , enclosed (or bill me later .....).

Rates shown are for railroad men only.

..... , ...
Name Railroad

..... , ...
Department Position or Title

5-53

One man easily handles this 4 man capacity inspection car!

This rugged, all steel, welded frame car features a light weight reversible transmission coupled to a powerful 4-cycle, air cooled engine and chain drive to the rear axle. Built for utility and comfort, too, the car is equipped with a spring suspended seat that reduces operator fatigue. Whatever your car needs, it will pay to . . .

Always Specify NORTHWESTERN

AUTHORIZED REPRESENTATIVES

BIRMINGHAM 3, ALABAMA
H. G. Mouat
544 American Life Bldg.
BOSTON, MASS.
William B. Joyce
P. O. Box 154, Beverly, Mass.
CHAMBLEE, GEORGIA
Southern Iron & Equipment Co.
5310 New Peachtree Road
CHICAGO 5, ILLINOIS
Duncan and Bevan
37 West Van Buren St.
CLEVELAND 12, OHIO
Industrial Supply Co.
Marshall Bldg.
DENVER 2, COLORADO
Milton W. Alley
1863 Wazee Street
LOUISVILLE 3, KENTUCKY
M. M. Dilley
912 S. Eighth Street
NEW ORLEANS 12, LA.
Church-Mundon Sales Co.
808 Carondelet Bldg.
OMAHA 2, NEBRASKA
McDonough Machinery & Supply Co.
906-7 Redick Tower
PHILADELPHIA 34, PA.
Quaker City Railroad Sales Co.
Allegheny Ave. & Kensington Ave.
PORTLAND 9, OREGON
Hermer Steel Products & Supply Co.
1515 N. W. Hoyt St.
ST. LOUIS 6, MISSOURI
William J. Roehl, Inc.
1950 North 11th St.
ST. PAUL 1, MINN.
George G. Prest
E-908 First Natl. Bank Bldg.
SAN FRANCISCO 5, CAL.
George L. Edmondson
681 Market Street
WASHINGTON 6, D.C.
J. B. Akers, Jr.
Suite 1102 Dupont Circle Bldg.
CANADA
MONTREAL 3, QUEBEC
Massons Canada Limited
65 Colborne Street
TORONTO 12, ONTARIO
Ontario Equipment & Supply Co.
111 Morton Street
VANCOUVER, B.C.
International Agencies & Mach. Co. Ltd.
2315 Cambie Street
WINNIPEG, MANITOBA
Frost Machinery Company Ltd.
971 Erin Street
EXCLUSIVE EXPORT AGENTS
NEW YORK 6, N. Y.
O. Philips & Company, Inc.
19 Rector Street

NORTHWESTERN Motor Company
MANUFACTURERS OF MAINTENANCE OF WAY EQUIPMENT
Factory and General Offices: Eau Claire, Wisconsin, U. S. A.

Association News (Cont'd)

Metropolitan Maintenance of Way Club

The next meeting of the club will be the annual outing, which will be held in June on a day not yet determined at the time this issue went to press.

Associated Railway Track Contractors

The following officers have been elected by the Associated Railway Track Contractors of America, Inc., for the following year: J. H. Deckert, president; Don Charlton, first vice-president; J. B. Badger, second vice-president; Royce

(*Continued on page* 512)

Meetings and Conventions

American Railway Bridge and Building Association—Annual meeting, September 15-17, 1953, Conrad Hilton (Stevens) Hotel, Chicago. Elise LaChance, Secretary, 431 S. Dearborn street, Chicago 5.

American Railway Engineering Association—Annual Meeting, March 16-18, 1954, Chicago. Neal D. Howard, Secretary, 59 E. Van Buren street, Chicago 5.

American Wood-Preservers' Association—W. A. Penrose, Secretary-treasurer, 839 Seventeenth street, N. W., Washington 6, D. C.

Bridge and Building Supply Association—L. R. Gurley, Secretary, 201 North Wells street, Chicago 6.

Maintenance of Way Club of Chicago—E. C. Patterson, Secretary-treasurer, Room 1512, 400 W. Madison street, Chicago 6.

Metropolitan Maintenance of Way Club—Secretary, 30 Church street, New York.

Mississippi Valley Maintenance of Way Club—P. E. Odom, Secretary-Treasurer, Room 1008, Frisco Building, 906 Olive Street, St. Louis 1, Mo.

National Railway Appliances Association—J. B. Templeton, Secretary, 1020 So. Central avenue, Chicago 44; Lewis Thomas, Assistant Secretary, 59 East Van Buren street, Chicago 5.

Railway Tie Association—Annual meeting, October 14-16, 1953, Biltmore Hotel, Atlanta, Ga. Roy M. Edmonds, Secretary-treasurer, 1221 Locust Street, St. Louis 3, Mo.

Roadmasters' and Maintenance of Way Association of America—Annual meeting, September 15-17, 1953, Conrad Hilton (Stevens) Hotel, Chicago. Elise LaChance, Secretary, 431 S. Dearborn Street, Chicago 5.

Track Supply Association—Lewis Thomas, Secretary, 59 E. Van Buren street, Chicago 5.

SELF-PROPELLED RAILAID works both on and off-track, travels at 4 rail speeds up to 14.4 m.p.h. Crane loads and unloads itself on ramp-equipped propulsion car in less than 10 minutes. It lifts 6.6 tons from car, 8¼ tons from ground . . . readily converts to clamshell, dragline, pile driver, ½-yard shovel or hoe. For more information, send for bulletin.

RAILROAD MUD-JACK® stabilizes track beds without interrupting rail traffic. Injection points are driven below ballast . . . hydraulic pump forces soil-cement slurry into weakened area . . . stabilizes existing material, leaves firm lasting sub-grade. You save on labor, cut maintenance costs, reduce "slow orders." Write for 8-page engineering booklet.

with KOEHRING *heavy-duty* 304

Operating from work train, or on independent off-track operation, the *reserve* strength and weight-stability of Koehring heavy-duty 304 protects work schedules against costly down time . . . and gives you a definite advantage in extra work capacity. With 13.9-ton lift on crawlers (25-tons on rubber) there's plenty of lift capacity for loading and unloading cars, scrap-handling and salvage around yards . . . placing girders, timbers and other materials on bridge construction and repairs. Heavy-duty 304 handles magnet crane, pile driver, clamshell and dragline buckets on a wide work range . . . readily converts to ¾-yard shovel or hoe for cutting down embankments, ditching, slide removal and other heavy digging.

With every 304 attachment, big Koehring booster clutch cuts normal lever pull 50% . . . reduces operator fatigue, yet retains "feel" of load. Heat-compensator spring makes clutch tension changes automatically, maintains top operating efficiency at all times. Check 304 work capacity and all heavy-duty mechanical features in new 36-page catalog . . . write for your copy. Other Koehring sizes: 7¾ to 79½-ton lift capacities . . . ½ to 2½-yard dipper capacities. K272

KOEHRING HEAVY DUTY

KOEHRING

COMPANY, Milwaukee 16, Wis.

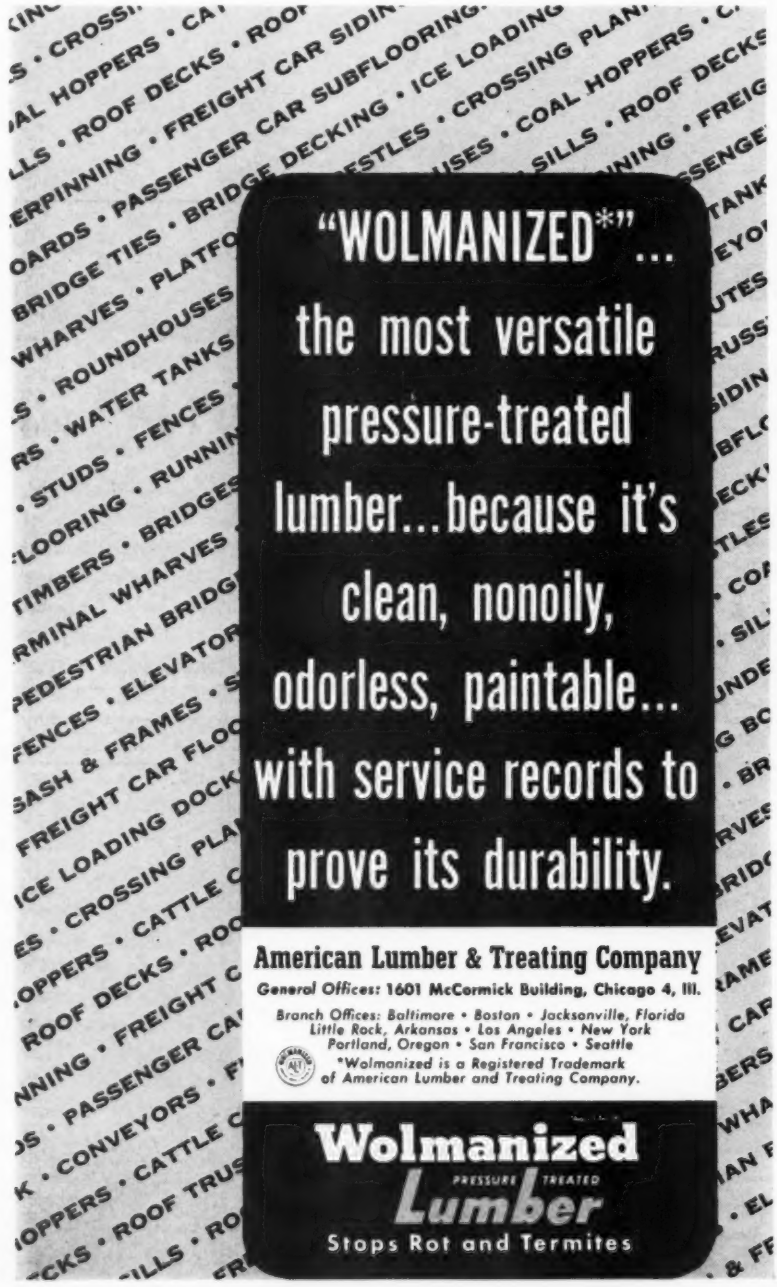
Subsidiaries: KWIK-MIX • PARSONS • [illegible]

Kershaw, secretary-treasurer; J. R. Slattery, assistant treasurer; and Mrs. Rita Dalby, assistant secretary. The new directors of the organization are: J. H. Deckert; Don Charlton; Royce Kershaw; Theodore Swanson; and A. C. Novelli.

Maintenance of Way Club in Chicago

The annual meeting of the club was held on the evening of April 27 at Eitel's restaurant, Chicago, beginning with dinner at 6:30 p.m. The principal speaker was C. G. Grove, chief engineer, Western region, Pennsylvania, and newly elected president of the American Railway Engineering Association. His subject was "Maintenance . . . Past, Present, Future." A noteworthy feature of this meeting was the presence of most members of the Board of Direction of the A.R.E.A. as well as chairmen of standing committees of that association. The A.R.E.A. Board of Direction and the committee chairmen had held a series of meetings earlier in the day.

In the election of officers for the Maintenance of Way Club, F. E. Austerman, assistant chief engineer, Chicago Union Station Company, and first vice-president of the club, was elected president; H. B. Christianson, assistant chief engineer—system, Chicago, Milwaukee, St. Paul & Pacific, and second vice-president of the club, was advanced to first vice-president; Roy Lumpkin, manager tie and timber department, Chicago, Rock Island & Pacific, and a director of the club, was advanced to second vice-president; Merwin H. Dick, editor, *Railway Track and Structures*, was re-elected executive secretary, and E. C. Patterson, chief clerk, Chicago & North Western, was re-elected secretary-treasurer. In addition, the following were elected directors: H. C. Koch, roadmaster, Belt Railway Company of Chicago; Fred W. Creedle, assistant engineer maintenance, Chicago & North Western; and G. Russell Betts, manager, railroad sales, Armco Drainage & Metal Products, Inc.


"WOLMANIZED*"... the most versatile pressure-treated lumber...because it's clean, nonoily, odorless, paintable... with service records to prove its durability.
American Lumber & Treating Company
General Offices: 1601 McCormick Building, Chicago 4, Ill.
Branch Offices: Baltimore • Boston • Jacksonville, Florida
Little Rock, Arkansas • Los Angeles • New York
Portland, Oregon • San Francisco • Seattle
*Wolmanized is a Registered Trademark of American Lumber and Treating Company.
Wolmanized
PRESSURE TREATED
Lumber
Stops Rot and Termites

Track Supply Association; Bridge & Building Supply Association

The various committees will meet soon to complete all arrangements for the joint exhibition of the Track Supply Association and Bridge and Building Supply Association to be held on September 14-17 at the Coliseum, Chicago, concurrently with annual conventions of the Roadmasters' and the Bridge and Building Associations. This will be the largest display in the history of these two organizations, 261 booths having been assigned to 115 firms including 26 companies who have not exhibited previously in these shows. Information about the desirable space still available may be obtained from Lewis Thomas, director of exhibits, 59 E. Van Buren St., Chicago 5.

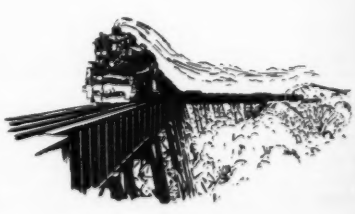
Bridge and Building Association

The next meeting of the Executive committee will be held on July 10 at the Chicago Engineers' Club. The principal item of business to be transacted will be the review of the technical committee reports to be presented at the convention in September. Other aspects of the program of the convention will also come in for discussion.

Roadmasters Association

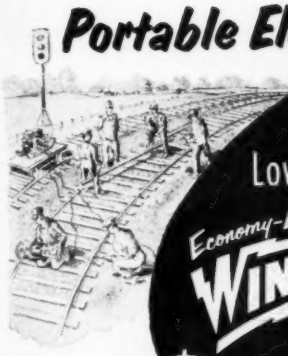
A meeting of the Executive committee will be held at the Chicago Engineers' Club on May 25. The main purpose will be to review the committee reports to be presented at the convention in September. The Executive committee will also discuss other aspects of the convention program.

(*Please turn to page* 514)



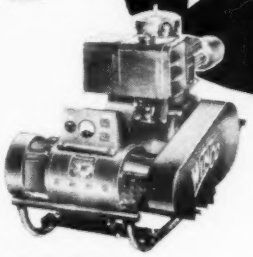
Portable Electric Power

for Speedy, Easy, Low Cost Maintenance



Economy-Engineered

WINCO ENGINE GENERATORS



Reduce maintenance costs with portable electric power to operate drills, saws, vibrators, tampers, nut trimmers, impact tools, grinders and wrenches. These new WINCO Generators are lightweight for easy portability—so sturdy they can "take it" on-the-job anywhere, anytime!

Model 4500—2500 Watts. Other models from 500 Watts to 10 KW. Prices Begin at $214.00.

Economy-Engineered **WINCO ENGINE GENERATORS**

WRITE FOR COMPLETE DETAILS

WINCHARGER CORPORATION 2109 E. 7th St. SIOUX CITY, IOWA

A wholly owned subsidiary of Zenith Radio Corporation

Increase Safety of Operations by Use of Q and C Derails

Hand Throw, Sliding, and Portable Types are available, all adjustable for a range of rail sizes which eliminates waste of adzing or shimming of ties, also reduces inventory.

Specify Q and C Derails for safety, economy and durability.

THE Q AND C CO.

59 East Van Buren St. Chicago 5 | 90 West St. New York 6 | 611 Olive St. St. Louis 1

King of the hill!

● The mountain sheep is sure-footed and rugged—and he continually calls on these capacities to preserve his title as "king" of his craggy domain.

The True Temper Rail Anchor is even more "sure-footed" and durable. It provides positive, stationary gripping action on any rail base—new or worn—for as long a period as you want. It's easy to apply, easy to remove and re-apply when necessary.

These qualities add up to unequalled efficiency and economy in track maintenance—and *reasons why* True Temper Rail Anchors continue to be first choice on thousands of miles of track.

Made and sold only by

TRUE TEMPER Corporation

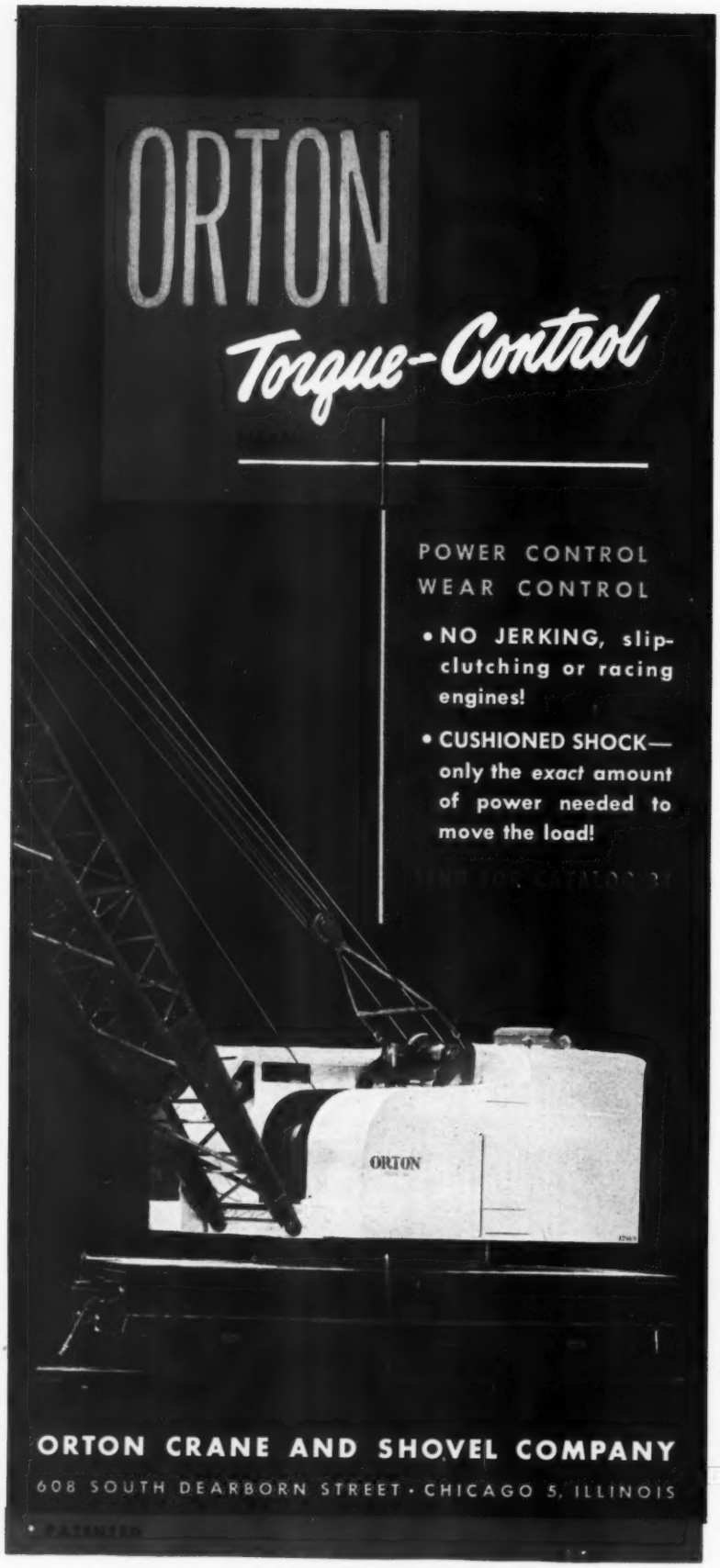
DISTRICT OFFICES:
2033 Daily News Building, Chicago, Illinois
105 Duane Street, New York, N. Y.

REPRESENTATIVES AT:
St. Louis, Missouri
St. Paul, Minnesota

RAILWAY APPLIANCE DIVISION
GENERAL OFFICES, CLEVELAND, OHIO
Factory: North Girard, Pa.

TRUE TEMPER

ALSO MAKERS OF TRUE TEMPER SAFETY RAIL FORKS • BALLAST FORKS • TRACK SHOVELS • SCOOPS • SCUFFLE HOES • AXES • HAMMERS • HATCHETS • SCYTHES • WEED CUTTERS


ORTON
Torque-Control
POWER CONTROL
WEAR CONTROL
• NO JERKING, slip-clutching or racing engines!
• CUSHIONED SHOCK—only the exact amount of power needed to move the load!
ORTON
ORTON CRANE AND SHOVEL COMPANY
608 SOUTH DEARBORN STREET • CHICAGO 5, ILLINOIS

Supply Trade News

General

The **Koehring Company,** Milwaukee, Wis., has announced the apopintment of three new distributors: **Kelbe Brothers Equipment Company,** Milwaukee, to handle sales of Koehring and Koehring subsidiary products in the state of Wisconsin; **Allied Equipment, Inc.,** Miami, Fla., to handle such sales in the 13 southern counties of the state of Florida; and the **Standard Machinery Company,** San Francisco, Cal., to handle sales in the Northern California territory.

Personal

J. F. Wilkes has been appointed director of research and product development of the **Dearborn Chemical Company,** Chicago. Mr. Wilkes received his Bachelor of Science degree in chemical engineering from the University of Florida in 1933, and the professional degree of chemical engineer in 1951. After spending six years with the water supply department of the Chesapeake & Ohio at Huntington, W. Va., where he held successive positions as laboratory assistant, assistant chemist, and chemist, Mr. Wilkes joined Dearborn in 1939 as a chemical engineer. After serving in the U. S. Army from 1942 until 1946, he rejoined Dearborn as technical director of the firm's railroad department—the position he held at the time of his recent appointment.

E. W. McClellan, manager of the Buffalo, N. Y., district office of the **Homelite Corporation,** Port Chester, N. Y., has been promoted to midwest regional manager in charge of the new office located at 120½ South Grove Avenue, Elgin, Ill. He will be in charge of sales and service activities of Homelite offices in Detroit, Mich., Cleveland, Ohio, Cincinnati, Indianapolis, Ind., Melrose Park, Ill., Kansas City, Mo., St. Paul, Minn., Toledo, Ohio, Grand Rapids, Mich., Milwaukee, Wis., St. Louis, Mo., and Omaha, Neb.

Other personnel changes in the Homelite organization include the appointments of **Francis Darrow** as manager of the Buffalo district office, **Ted Skroch** as manager of the Indianapolis district office, **Harold E. Wiersum** as manager of the Grand Rapids branch office, and **James W. Thompson** as manager of the Charlotte, N. C. district office.

Milton J. Hassan, vice-president of engineering in the Trackwork division of the **Taylor-Wharton Iron & Steel Co.,** at Cincinnati, Ohio, has been named vice-president of engineering and operations of the Trackwork division.

George P. Page, formerly principal assistant engineer on the Norfolk & Southern, has joined Taylor-Wharton as southern sales manager with headquarters at Birmingham, Ala.

DeVilbiss spray equipment boosts maintenance painting efficiency 75%, cuts costs up to 50%

P-NCD SPRAY OUTFIT

$85.95 *F.O.B., TOLEDO, OHIO*

General Utility Spray-Painting Outfit

An ideal outfit for small jobs. Can be carried anywhere and plugged in any 115 circuit. High-quality spray gun and powerful ⅓ h.p. compressor supplies ample air for atomizing all common materials. Gun is lightweight, easy to handle, has adjustable material control and adjustment for spray pattern.

Simplicity of DeVilbiss equipment permits even inexperienced painters to turn out professional jobs in ¼ the time. Complete outfits priced as low as $85.95

In as little as 2 hours, even a novice painter will get the "feel" of DeVilbiss spray equipment. After a day of spray painting, he'll be producing quality work with ease.

Couple this advantage with the great speed and cost saving of spray painting, plus the durability of DeVilbiss equipment itself, and you can see why DeVilbiss is preferred by painters, building and maintenance superintendents the country over.

Your local DeVilbiss jobber will gladly give you full information on the complete line of DeVilbiss spray guns, air compressors, hose and spray-painting accessories. You'll find his name in the yellow pages of your phone book.

One-Man Spray-Painting Outfit

(without compressed air)

If you have your own compressed air, this DeVilbiss combination of 5-gal. pressure-feed paint tank, air and fluid hose for 75-ft. reach, and high-capacity spray gun is designed for fast work on medium-size paint jobs in factories, mills, shops. Hooks into your compressed air line. Produces uniform finishes with paints, enamels, varnishes, other common painting materials. Air compressing equipment available at extra cost.

Two-Man Spray-Painting Outfit

(without compressed air)

A heavy-duty, high-speed, big-capacity outfit including 10-gal. pressure-feed paint tank, air and fluid hose for 75-ft. reach, two production spray guns. For painting jobs where maximum performance of two spray guns is demanded, as in large factories or structures. Portable air compressing equipment available at extra cost.

THE DEVILBISS COMPANY
Toledo, Ohio

Windsor, Ontario • London, England
Santa Clara, Calif.

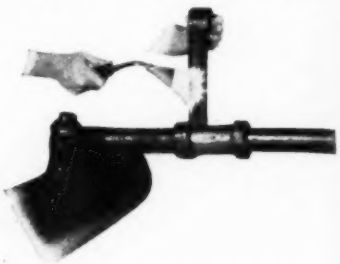
Branch Offices and Distributors in Principal Cities Throughout the United States, Canada and the World

FOR BETTER SERVICE, BUY

DEVILBISS

More and more railroad maintenance men are depending on TAPECOAT to protect pipe joints and short pipe sections in underground service, at bridge crossings and wherever corrosion is a problem.

TAPECOAT is the coal tar protection in handy tape form. It comes in widths of 2, 3, 4, and 6 inches for spiral wrapping; and in widths of 18 and 24 inches for cigarette wrapping of large diameter pipe, tanks, etc.



Application is quick, easy, economical. Just a flash of a torch and TAPECOAT provides a perfect lasting bond to seal out the elements of corrosion.

TAPECOAT engineers have specialized in this protection for more than 10 years. Call on them to help you work out your individual requirements.

Write for full details

*Reg. U. S. Pat. Off.

Originators of the Coal Tar Tape for Pipe Joint Protection

1541 Lyons Street, Evanston, Illinois

Advertisers IN THIS ISSUE

A

Air Reduction Company, Incorporated 433
Agency—C. M. Basford Company

Allis-Chalmers, Tractor Division 503
Agency—Bert S. Gittins, Advertising

American Lumber & Treating Company .. 512
Agency—Fuller & Smith & Ross, Inc.

Armco Drainage & Metal Products, Inc. ... 458
Agency—N. W. Ayer & Son, Inc.

B

Barber-Greene 494
Agency—The Buchen Company

Bethlehem Steel Company 427
Agency—Jones & Brakeley, Inc.

Blaw-Knox Equipment Division of Blaw-Knox Co. 517
Agency—Russell T. Gray, Inc.

Bogle, R. H., Company, The 450

Brainard Steel Division, Sharon Steel Corporation 457
Agency—The Griswold-Eshleman Co.

Browning Crane & Shovel Co., The 435
Agency—Meermans, Inc.

Bucyrus-Erie Company 501
Agency—Bert S. Gittins, Advertising

Buda Company, The 498
Agency—Waldie and Briggs, Inc.

C

Caterpillar Tractor Co. 431, 445
Agency—N. W. Ayer & Son, Inc.

Chapman Chemical Company 502
Agency—Greenhaw & Rush, Inc.

Colorado Fuel and Iron Corporation, The .. 430
Agency—Doyle, Kitchen & McCormick, Inc.

Cullen-Friestedt Co. 496
Agency—Ross Llewellyn, Inc.

Cummins Engine Company, Inc. 451
Agency—Needham, Louis and Brorby, Inc.

D

Dearborn Chemical Company 452
Agency—The Buchen Company

DeVilbiss Company, The 515
Agency—Brooke, Smith, French & Dorrance, Inc.

Dow Chemical Company, The 428
Agency—MacManus, John & Adams, Inc.

Duff-Norton Manufacturing Co., The 500
Agency—Bond & Starr, Inc.

Du Pont, E. I., De Nemours & Co., Inc. .. 437
Agency—Batten, Barton, Durstine & Osborn, Inc.

E

Eaton Manufacturing Company ..... Inside Front Cover
Agency—The Jay H. Maish Company

Electric Tamper & Equipment Co. 439
Agency—Stevens, Inc.

F

Fairbanks-Morse & Co. 436
Agency—The Buchen Company

Fairmont Railway Motors, Inc. 462
Agency—MacManus, John & Adams, Inc.

G

Gardner-Denver Company 464
Agency—The Buchen Company

H

Homelite Corporation 461
Agency—Sutherland-Abbott

Hough, Frank G., Co., The 455
Agency—Ervin R. Abramson, Advertising

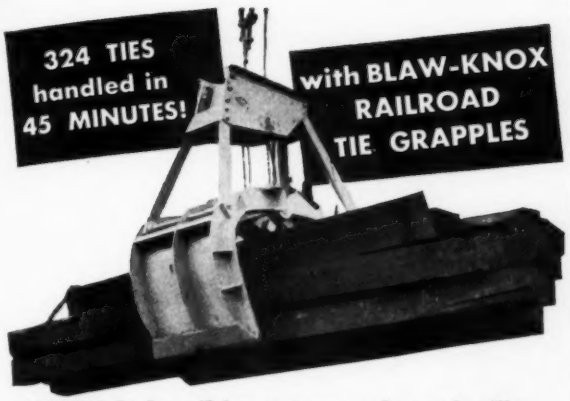
J

Johns-Manville 434
Agency—J. Walter Thompson

K

Kennedy, H. T., Company, Inc. 493
Agency—Davis-Parsons, Inc.

Koehring Company 511
Agency—Andrews Agency



HERE'S the fast, efficient tool you need to cut handling costs for any job of loading or unloading railroad ties. Check these Blaw-Knox features before you buy any grapple . . .

- Low grapple height (low headroom) permits maximum crane reach.
- Safe operation when handling creosoted ties from high side gondola cars.
- All welded construction permits maximum handling capacity for a crane of given size, without sacrificing strength.
- Efficient design allows deep penetration for a full load.
- Fast, safe crane operation results from firm gripping of the ties.

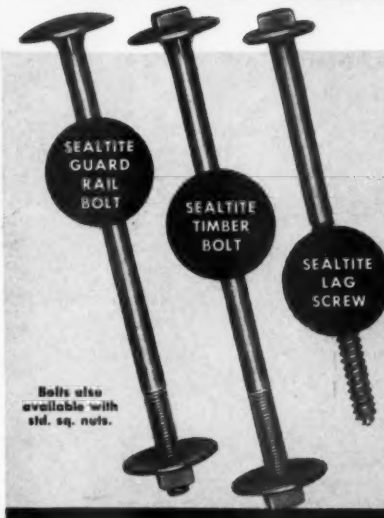
WRITE FOR BULLETIN 2404

BLAW-KNOX

BLAW-KNOX EQUIPMENT DIVISION
OF BLAW-KNOX CO., PITTSBURGH 22, PA.
2106 Farmers Bank Building
Offices in Principal Cities

Lewis

sealtite
railroad fasteners



Bolts also available with std. sq. nuts.

Used by 85% of America's Class 1 Railroads

SPECIFY SEALED-TITE ZINC COATING
Sealtite products sealed in zinc give twice the wear and greater economy by cutting expensive replacements. For Double-Life and freedom from corrosion, specify Hot-Dip Galvanized . . . Sealed in Zinc!

See your Lewis representative, or contact factory for samples, prices and full details.

Lewis BOLT & NUT COMPANY
504 Malcolm Ave. S. E.
MINNEAPOLIS 14, MINNESOTA

LOOK FOR THIS STAMP OF U QUALITY

L

Le Tourneau, R. G., Inc. 448-449
Agency—Andrews Agency, Inc.

Lewis Bolt & Nut Company 517
Agency—Ruthrauff & Ryan, Inc.

M

Mall Tool Company 502
Agency—The Advertising Corporation

Matisa Equipment Corporation, The 442
Agency—W. S. Kirkland, Advertising

Moss, T. J., Tie Company 505
Agency—Batz-Hodgson-Neuwoehner Advertising Agency

N

National Aluminate Corporation .... Back Cover
Agency—Armstrong Advertising Agency

National Lock Washer Company, The ..... Inside Back Cover
Agency—Kiesewetter, Associates, Inc.

Nordberg Mfg. Co. 456
Agency—Russell T. Gray, Inc.

Northwest Engineering Company 429
Agency—Russell T. Gray, Inc.

Northwestern Motor Company 510
Agency—F. H. Faber, Advertising

O

Oman, D. W., & Sons, Inc. 508
Agency—Graves & Associates

Orton Crane and Shovel Company 514
Agency—W. S. Kirkland, Advertising

Oxweld Railroad Service Company, a Division of Union Carbide and Carbon Corporation 440
Agency—J. M. Mathes, Incorporated

Q

Q and C Co., The 513

R

Racine Hydraulics & Machinery, Inc. 459
Agency—The L. W. Ramsey Advertising Agency

Rail Joint Co., Inc., The ..... Front Cover

Rails Company, The 497

Railway Ballast Conditioning Corporation .. 447
Agency—F. H. Faber, Advertising

Railway Track-work Co. 499
Agency—O. S. Tyson and Company, Inc.

Reade Manufacturing Co., Inc., The 491

Ross-Martin Company 508
Agency—Louis A. Brandenburg, Advertising

Rust-Oleum Corporation 507
Agency—O'Grady-Andersen-Gray, Inc.

S

Schramm, Inc. 446
Simmons-Boardman Publishing Corp. 509
Sperry Rail Service, Division of Sperry Products, Inc. 453
Agency—Hugh H. Graham & Associates, Inc.
Spray Services, Incorporated 438
Agency—John J. McCormack

T

Tapecoat Company, The 516
Agency—Fred H. Ebersold, Inc.

Templeton, Kenly & Co. 508
Agency—Glenn, Jordan, Stoetzel, Inc.

Timken Roller Bearing Company, The 518
Agency—Batten, Barton, Durstine & Osborn, Inc.

True Temper Corporation 513
Agency—The Griswold-Eshleman Co.

U

Union Metal Manufacturing Co., The 432
Agency—The Griswold-Eshleman Co.

Unit Crane & Shovel Corp. 506
Agency—Paulson-Gerlach & Associates, Inc.

V

Viking Pump Company 508
Agency—Walter E. Battenfield Company

W

Warner & Swasey, Gradall Division 441
Agency—The Griswold-Eshleman Co.

Wincharger Corporation 513
Agency—Atlas Advertising Agency

Wisconsin Motor Corp. 499
Agency—Paulson-Gerlach & Associates, Inc.

Woolery Machine Company 454
Agency—W. S. Kirkland, Advertising

Z

Zone Company, The 504
Agency—Harry Schneiderman, Inc.

Only one tapered roller bearing gives you all these 10 advantages...

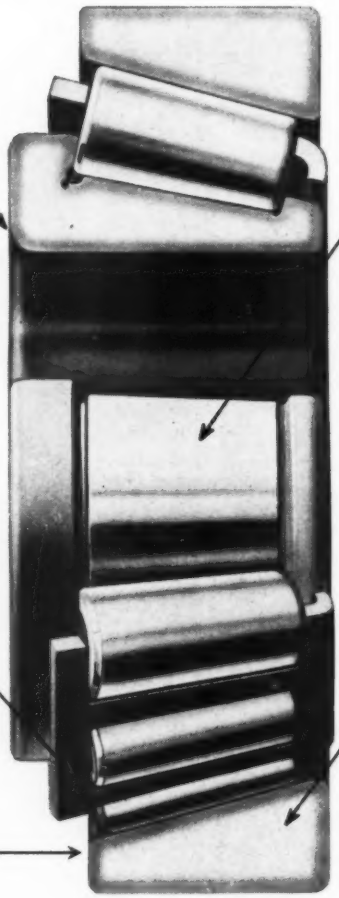
1 **GENEROUS RADIUS**—for greater shaft strength.

2 **CHOICE OF 26 DIFFERENT TYPES.**

3 **SOFT STEEL CAGE**—to keep rollers separate and prevent scuffing.

4 **PRECISION MANUFACTURE**—which makes possible bearings with a maximum runout tolerance of less than 75 millionths of an inch.

5 **CASE-HARDENED BEARING SURFACES**—to resist wear.



6 **MICRO-INCH SURFACE FINISH**—to minimize friction.

7 **CHOICE OF 5850 SIZES.**

8 **TIMKEN FINE ALLOY STEEL**—specially developed to give long bearing life.

9 **TOUGH CORE**—to resist shock.

10 **POSITIVE ROLLER ALIGNMENT**—gives maximum bearing capacity.

...it's stamped with the trade-mark "TIMKEN®"

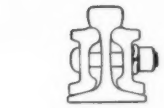
NO other bearing gives you *all* the advantages you get with Timken® bearings. Ten of these advantages are listed above. They result from the fact that the Timken Company is the foremost producer of tapered roller bearings and leads in 1) advanced design, 2) precision manufacture, 3) rigid quality control, and 4) special analysis steels.

Be sure that every bearing you use in the machines you build or buy is stamped with the trade-mark "Timken". The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS

NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▱ BEARING TAKES RADIAL ◎ AND THRUST →◎← LOADS OR ANY COMBINATION ✳

IMPROVED HIPOWERS
IMPROVE TRACK



Cushioning and absorbing shocks and stresses; equalizing bolt tensions; protecting rail ends and joint bars.

Their tremendous reserve power gives greater safety at less cost.

It is for these sound reasons that so many roads specify Improved Hipowers.

THE NATIONAL LOCK WASHER COMPANY
NEWARK 5, N. J., U. S. A.

A COMPLETE LINE OF RAILWAY SPRING WASHERS

COURTESY OF THE SANTA FE RAILWAY

Once Over Lightly

WITH

Nalco H-174

for a Full Season's

WEED CONTROL

ONCE over lightly in your yards with Nalco H-174 gives you a full season of effective weed and brush control. High activity and sustained, non-selective killing power eliminate emergent growth, prevent regrowth by staying in the soil for months after application.

No mixing or dilution of Nalco H-174 is necessary. New granular, free-flowing form can be used as it comes from the convenient shaker box, or in Nalco hand or wheeled spreaders.

For yard application where cars cannot be conveniently moved, the Nalco wheeled spreader is ideal. Spreads Nalco H-174 at adjustable dosage rates, and up to sixteen feet total width. Low distributor head spreads H-174 evenly, economically over area being treated.

Full information on Nalco H-174 and Nalco Spreaders will be furnished promptly upon request.

NATIONAL ALUMINATE CORPORATION
6196 West 66th Place • Chicago 38, Illinois
In Canada: Alchem Limited, Burlington, Ontario

A *Nalco*®

PRODUCT . . . Serving Railroads through Practical Applied Scien